SEGA

LASER GHOST™

Owner's Manual

3 PLAYER GAME

SEGA ENTERPRISES, INC.

420-5954-01

LASER GHOST

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SPECIFICATIONS

HEIGHT:...............................	71 in.
WIDTH:...............................	49 in.
DEPTH:................................	36 in.
NET WEIGHT:......................	463 lb.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Table of Contents

NOTE: DESCRIPTIONS HEREIN CONTAINED MAY BE SUBJECT TO IMPROVEMENT OR CHANGES WITHOUT NOTICE.

INTRODUCTION OF THE OWNER'S MANUAL

SEGA ENTERPRISES, LTD., supported by its high electronic technology of LSIs, microprocessors, etc. and a wealth of experience, has for more than 30 years been supplying various innovative and popular game machines to the world market. This OWNER'S manual is intended to provide detailed comments together with all the necessary information covering the operation in general of electronic assemblies, electromechanical servicing control, spare parts, etc. The manual is intended for those who have knowledge of electricity and technical expertise especially in ICs, CRTs, microprocessors, etc. Carefully read so as to acquire sufficient knowledge before working on the machine. Should there be a malfunction, non-technical personnel should under no circumstances touch the interior system.

HANDLING PRECAUTIONS

When installing or inspecting, be very careful of the following points and pay attention to ensure that the player can enjoy the game safely.

- Be sure to turn the power off before working on the machine.
- To insert or pull out the plug quickly is dangerous.
- It is necessary to make sure that the power cord or the grounding wire is not exposed on the road, etc. in a manner so as to be dangerous. Make sure that grounding connections are made safely at the position where specified.
- Do not use any fuse that does not meet the specified rating.
- Make complete connections for the IC board and other connectors. Insufficient insertion is very dangerous.

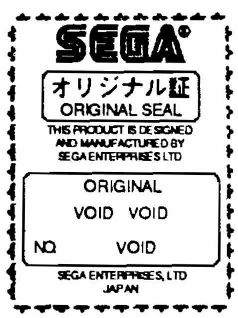
Also, for the IC board circuit inspections, only the logic probe is allowed. The use of a tester is not permitted, so be careful in this regard. After confirming that there are no irregularities, turn the power ON.

PREVENTION OF COUNTERFEITING AND CONVERSION

LABELLING

To prevent counterfeits and conversions, the following labels are put on all the SEGA products. When handling such goods, be sure to confirm the labels. They are used to prevent illegal acts such as the unauthorized copying of the products and the printed circuit boards thereof or carrying on business by manufacturing similar merchandise or by converting, selling or using such products or printed circuit boards.

The following seal is put on the machines manufactured by SEGA



ORIGINAL SEAL

COPYRIGHT NOTICE

This SEGA product has the copyright notice as follows:

PRECAUTIONS CONCERNING THE PLACE OF INSTALLATION

This is an indoor game machine. Absolutely do not install it outside. Even indoors, avoid installing in places mentioned below so as to ensure proper usage:

- o Places subject to rain or water leakage, or condensation due to humidity.
- o In the proximity of an indoor swimming pool and/or shower.
- o Places subject to direct sunlight.
- o Places subject to heat sources from heating units, etc., or hot air.
- o Vicinity of highly flammable/volatile chemicals or hazardous matter.
- o Sloped surfaces.
- o Vicinity of anti-disaster facilities such us fire exits and fire extinguishers.
- o Places subject to any type of violent impact.
- o Dusty places.
- o Residential Environment - (See F.C.C. statement below)

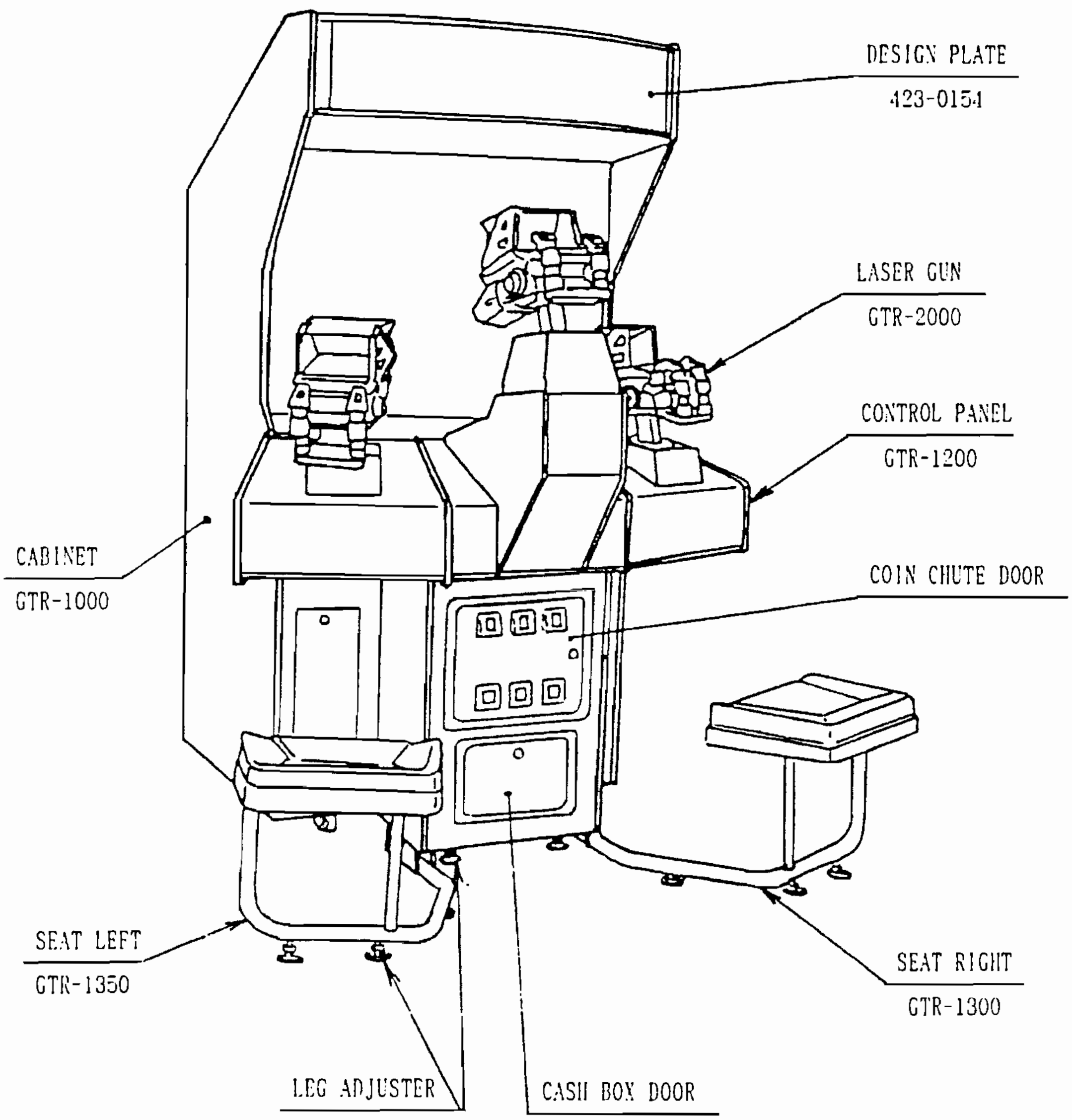
F.C.C. REQUIREMENTS

The Federal Communications Commission requires that all Class A equipment be verified and labeled as follows:

This equipment complies with the requirements in part 15 of FCC Rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take what ever steps are necessary to correct the interference.

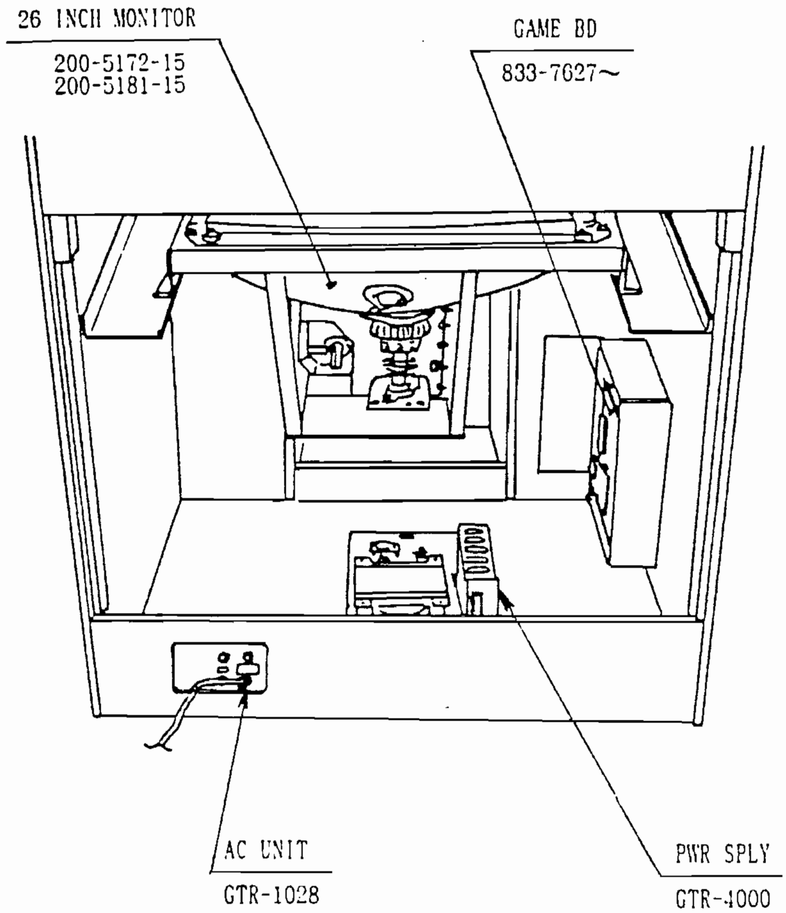
This label must be permanently attached in a conspicuous location and the text must be legible. If this label is removed or tampered with, such action is punishable under Section 503 of the Communications Act of 1934 (ACT), as amended.

NAME OF PARTS ①



* When transporting the machine on a floor, lift up the 10 adjusters (4 for the cabinet and 6 for the seats) and use the casters.

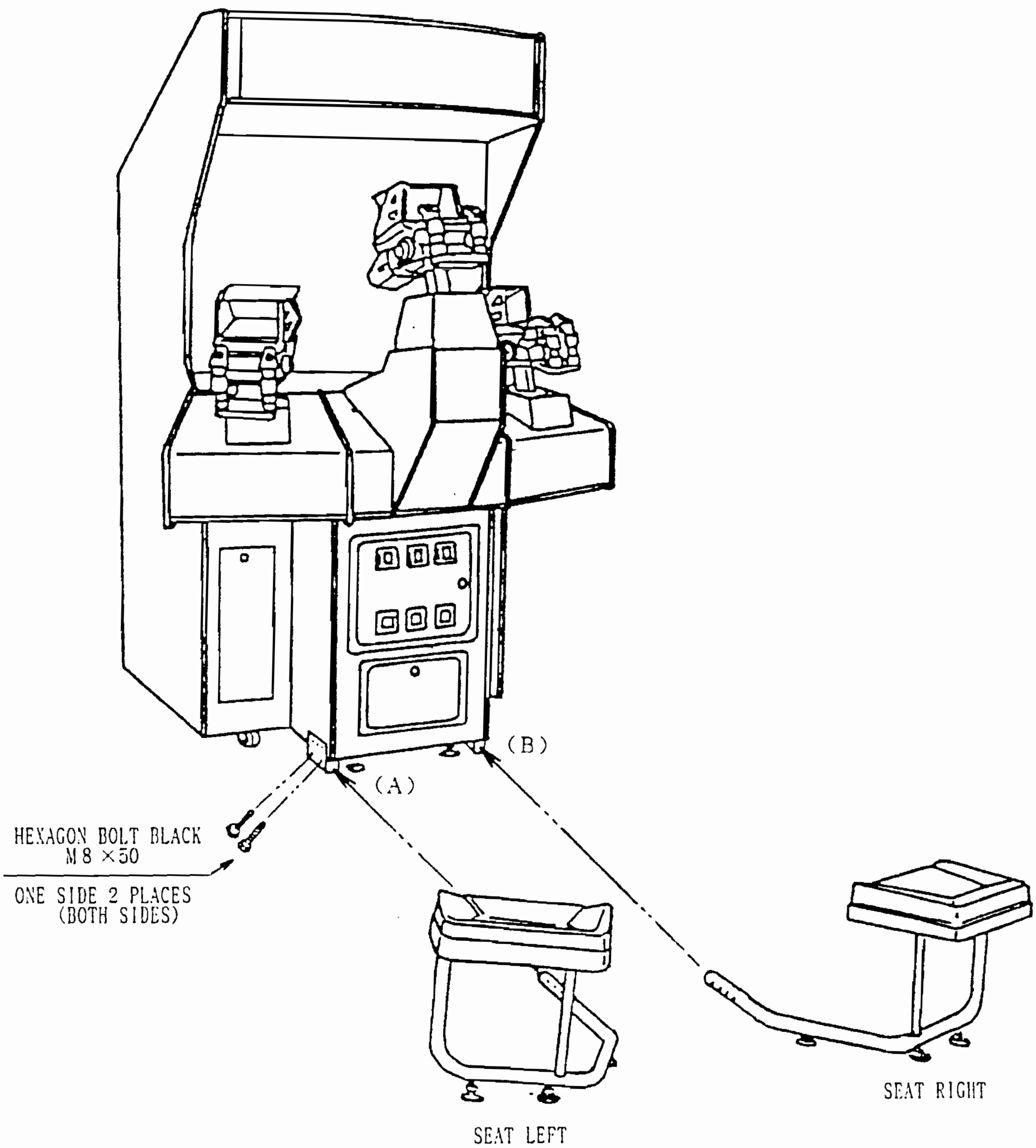
NAME OF PARTS ②



TOOLS & ACCESSORIES

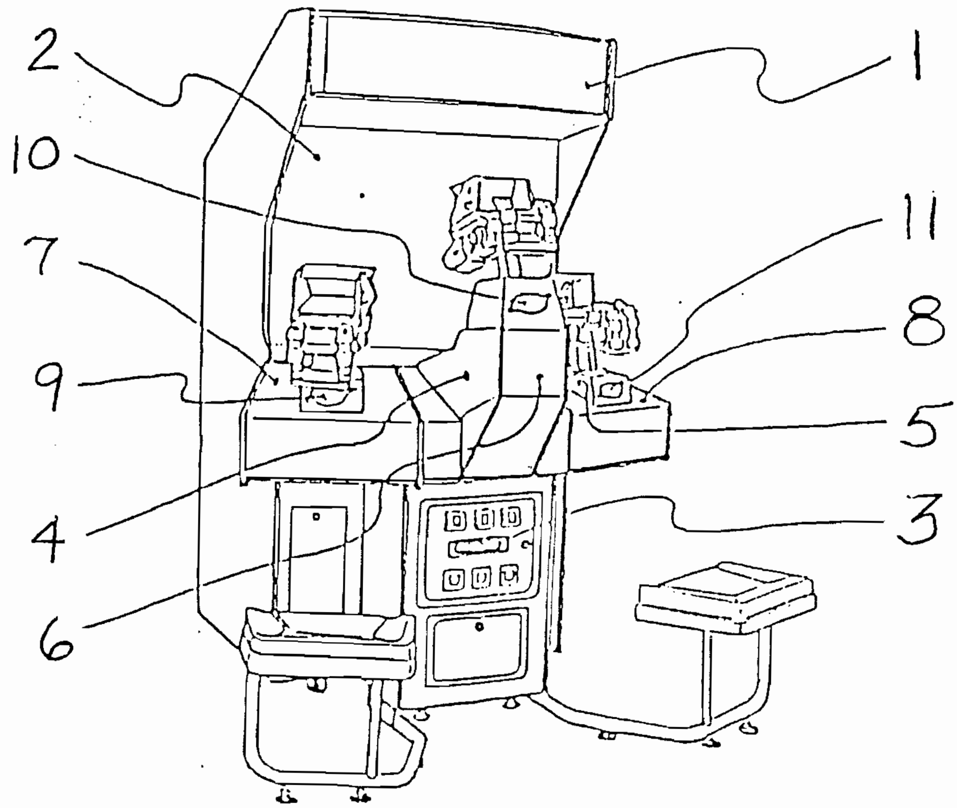
220-5130	VOL. CONT B-5K OHM.
540-0006-01	WRENCH FOR TAMP PRF SCR DUAL TYPE M4
540-0007-01	WRENCH FOR TAMP PRF SCR DUAL TYPE M5
540-0009-01	WRENCH FOR TAMP PRF SCR DUAL TYPE M8
839-0016	ASSY SWITCH BOARD

HOW-TO-INSTALL THE SEATS



Insert SEAT LEFT PIPE in the cabinet hole (A) and SEAT RIGHT PIPE in the hole (B) and fasten them by using a total of 4 hexagon bolts black (M8 × 50).....(2 for each seat)..... The seat adjustments can be made within a range of 50 mm.

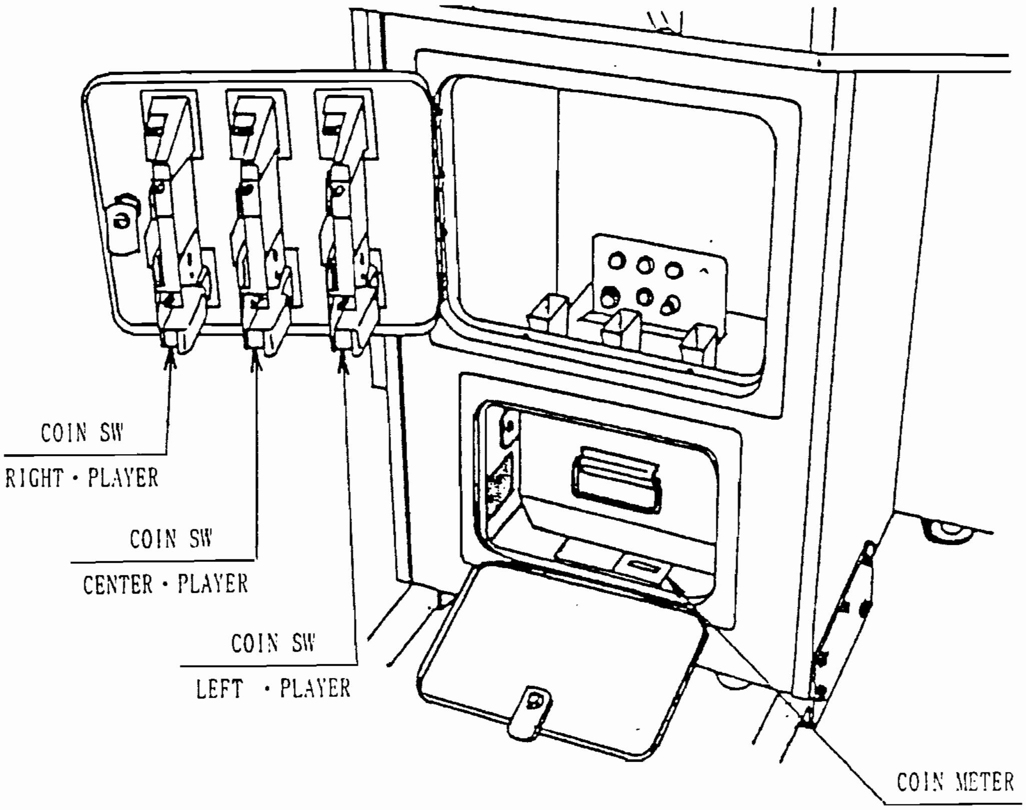
DESIGN RELATED PARTS

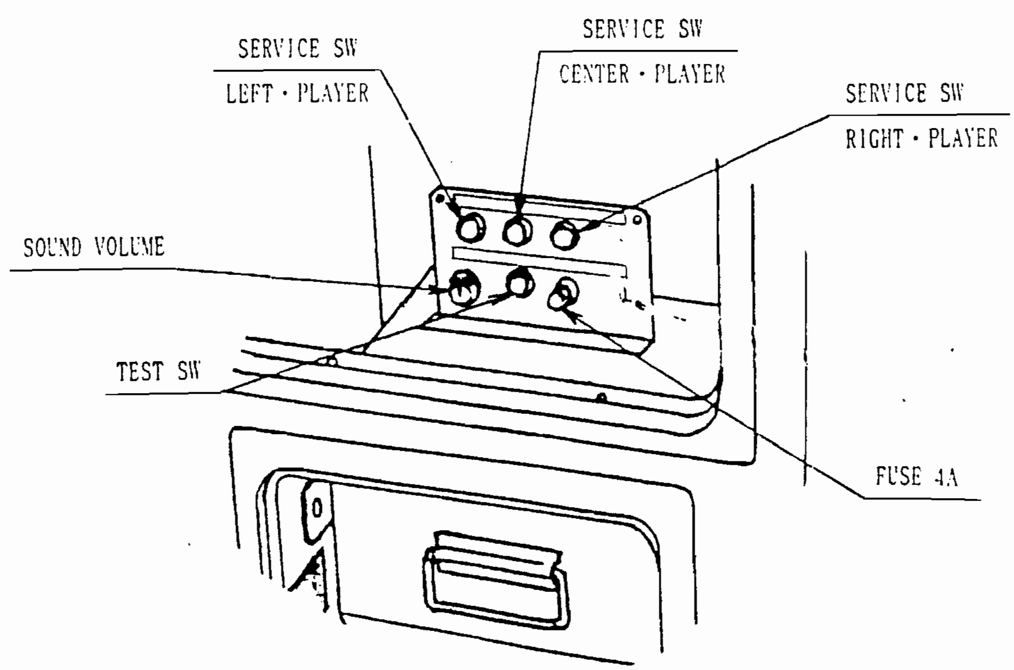


①	GTR-1054	DESIGN PLATE LASER GHOST
②	GTR-1014	FRONT GLASS
③	GTR-1030	STICKER BILL MAX CAROL
④	GTR-1202-F	STICKER LEFT
⑤	GTR-1202-G	STICKER RIGHT
⑥	GTR-1202-H	STICKER CENTER
⑦	GTR-1211-B	DESIGN PLATE SHEET BLUE
⑧	GTR-1213-A	DESIGN PLATE SHEET RED
⑨	GTR-1221	STICKER BILL
⑩	GTR-1222	STICKER MAX
⑪	GTR-1223	STICKER CAROL

SW UNIT

Opening the coin chute door allows the service switch to operate.





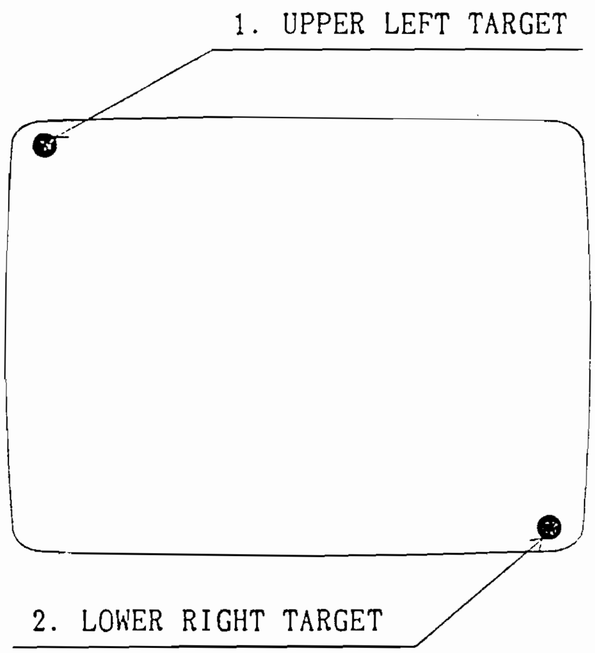
The function of each switch is as follows:

TEST SWITCH	Used for displaying SELF-TEST screen modes.
SERVICE SWITCH (Left Player)	Used for the purpose of servicing and increasing the credits without registering on the meter.
SERVICE SWITCH (Center Player)	Used for the purpose of servicing and increasing the credits without registering on the meter.
SERVICE SWITCH (Right Player)	Used for the purpose of servicing and increasing the credits without registering on the meter.
FUSE 4 AMP	Used for the Transformer's secondary voltage (100V) overcurrent protection.
SOUND VOLUME	Used for adjusting the speaker's sound volume.

SIGHTING ADJUSTMENTS (FOR THE GAME MODE)

When the game mode does not appear on the screen
(i.e. when in the GUN ADJUSTMENT mode) :

In this game, GUN SIGHTING data is stored in the BACKUP MEMORY. However, due to installation or transportation when the machine is not energized for more than one week, or after making the MAIN BD adjustments, the following (but not the game mode) will appear. In this case, make the following adjustments:



1. Pull the left-hand side gun's LASER button, and the target flashes on the upper left side. Direct the gun towards the target and pull the LASER button.
2. The target flashes on the lower right side.
   Direct the gun towards the target and pull the LASER button.
3. Make similar adjustments to the center and right-hand side gun sighting.
4. After the adjustments, simultaneously push both guns' (left-hand side and center) SPECIAL WEAPON buttons and the game mode will appear.

* Ordinary GUN SIGHTING adjustments can be made by performing the SELF-TEST (refer to the SELF TEST mode).

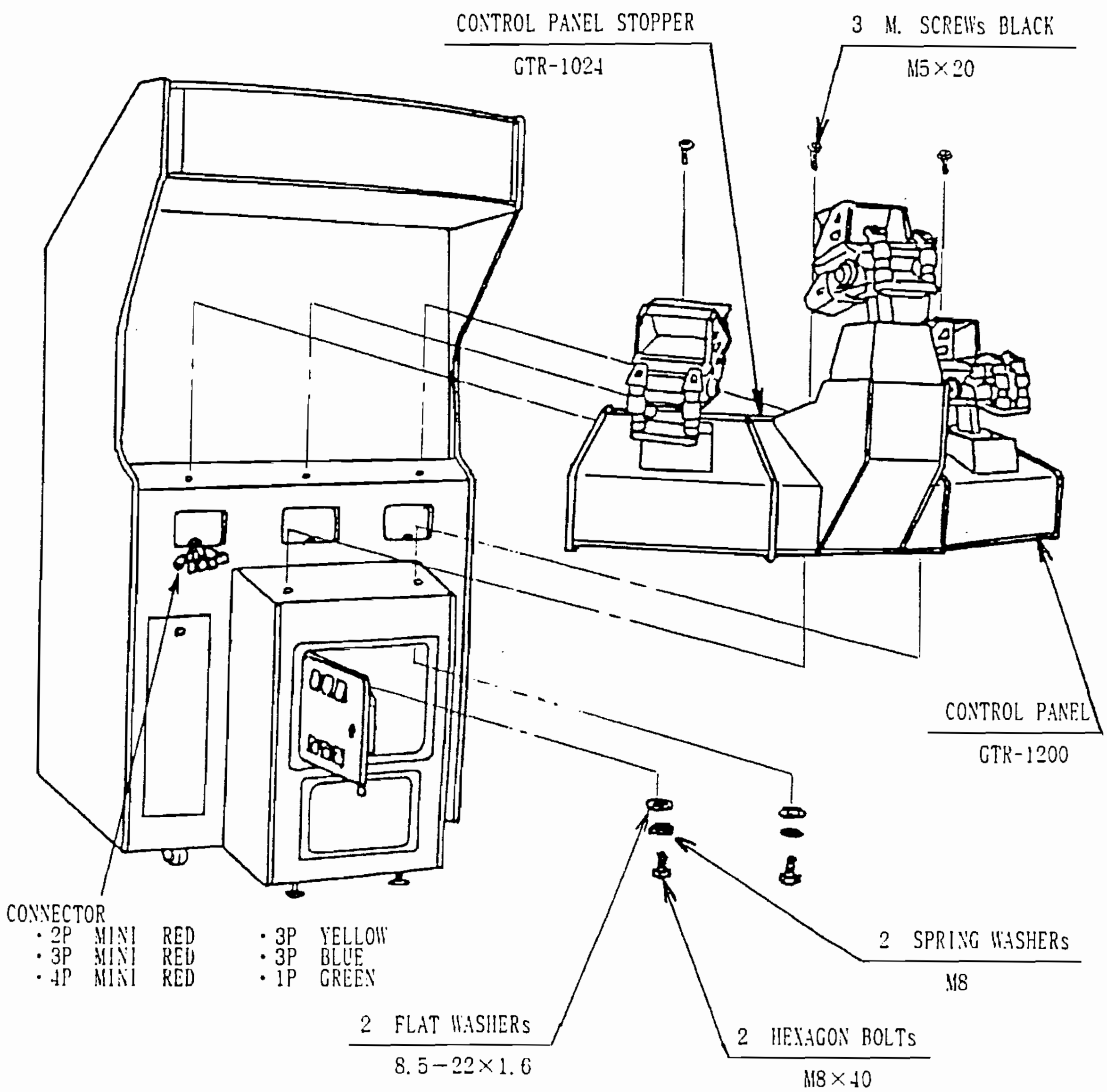
REMOVING THE CONTROL PANEL

PROCEDURE

① Take off the 3 machine screws, black (M5×20) on the cabinet side, which secure the cabinet and the control panel.

② Open the coin chute door and take off 2 each of the hexagon bolts (M8×40), spring washers (M8) and flat washers (8.5-22×1.6) which secure the bottom of the control panel.

③ Pull the control panel towards you and disconnect the 18 connectors (6 per player position) and remove the entire panel.



REPLACING THE LED BOARD AND THE MOTOR

(1) REMOVING THE COVER

① Take off the 16 TAMPERPROOF SCREWS (M4 × 6) for both sides; and remove the BODY RIGHT/LEFT and COVER RIGHT/LEFT.

② Take off the 4 machine screws and remove the gun cover to have the LED BOARD appear (see FIG. 1).

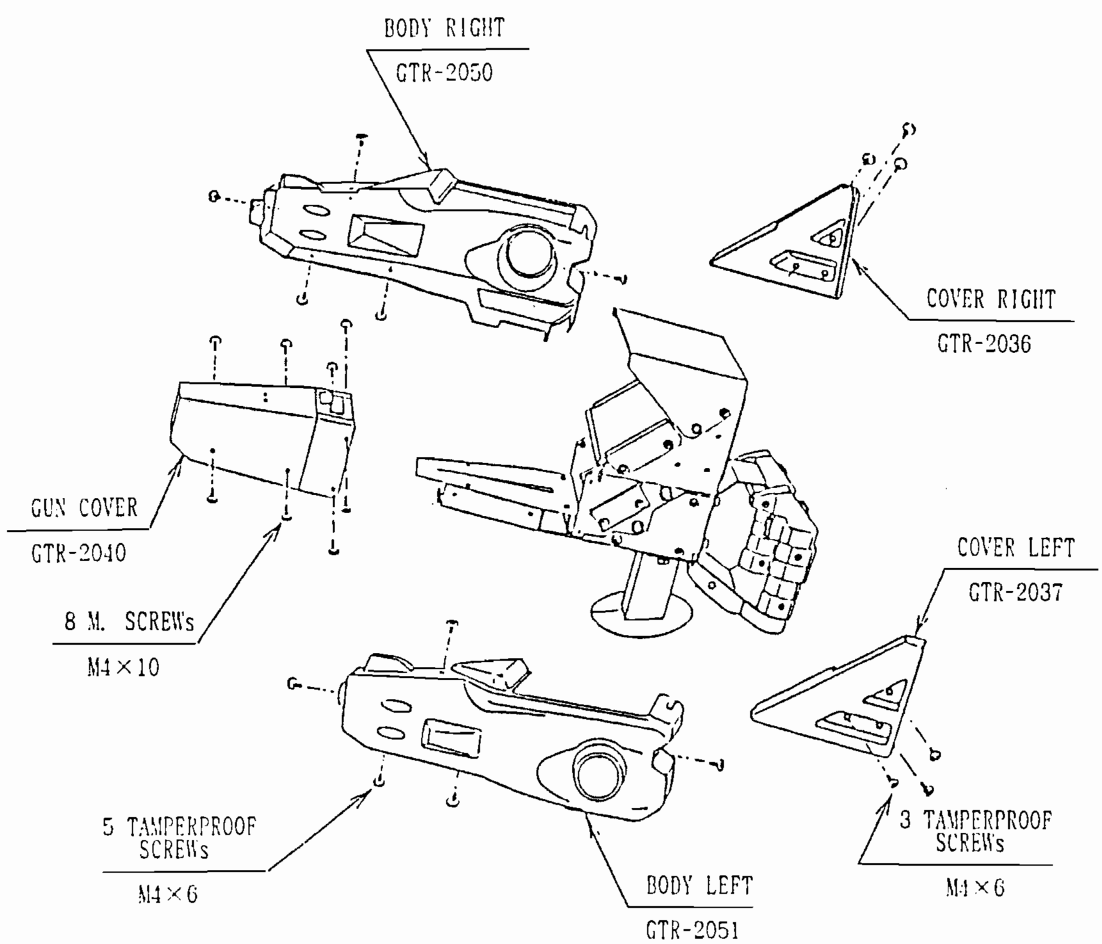


FIG. 1

(2) LED BOARD REPLACEMENT

① Take off the 4 machine screws black (M4 × 10) and the slit.

② Take off the 4 S-TITE SCREWs (M4 × 6), disconnect the CONNECTOR and remove the LED BOARD (sec FIG. 2).

CAUTION :

When assembling, have the slit match the center of the LED.

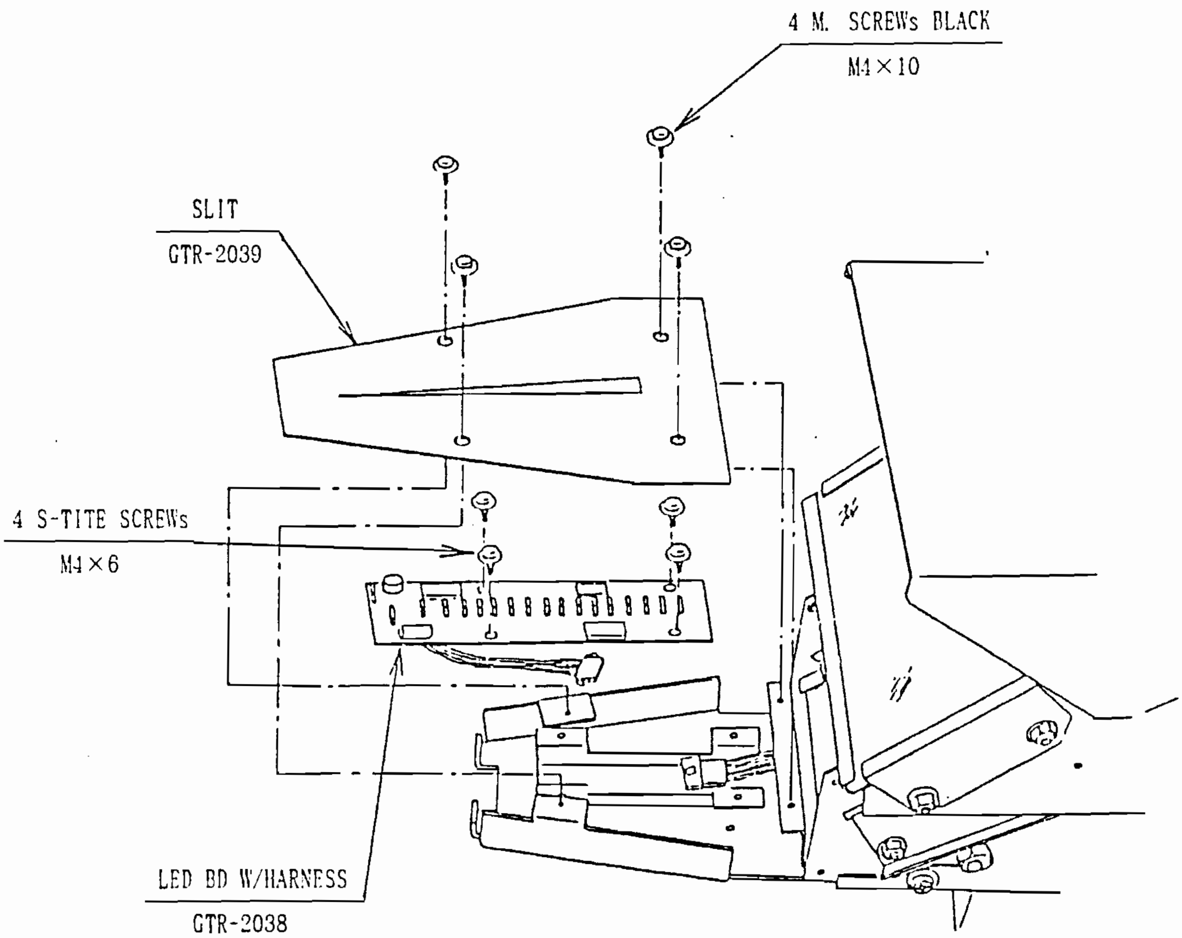


FIG. 2

(3) REMOVING THE VIBRATION UNIT

① Take off the 6 machine screws (M5 × 8) and pull out the mirror box upwards.

② Take off the 2 (M4) NUTs and 2 machine screws (M4 × 14), then remove the vibration unit (see FIG.3).

CAUTION:

When removing the VIBRATION UNIT, be sure not to lose the 2 SPACERs.

When installing the VIBRATION UNIT, be sure to apply the NUT(s) and a commercially available adhesive agent used for screws.

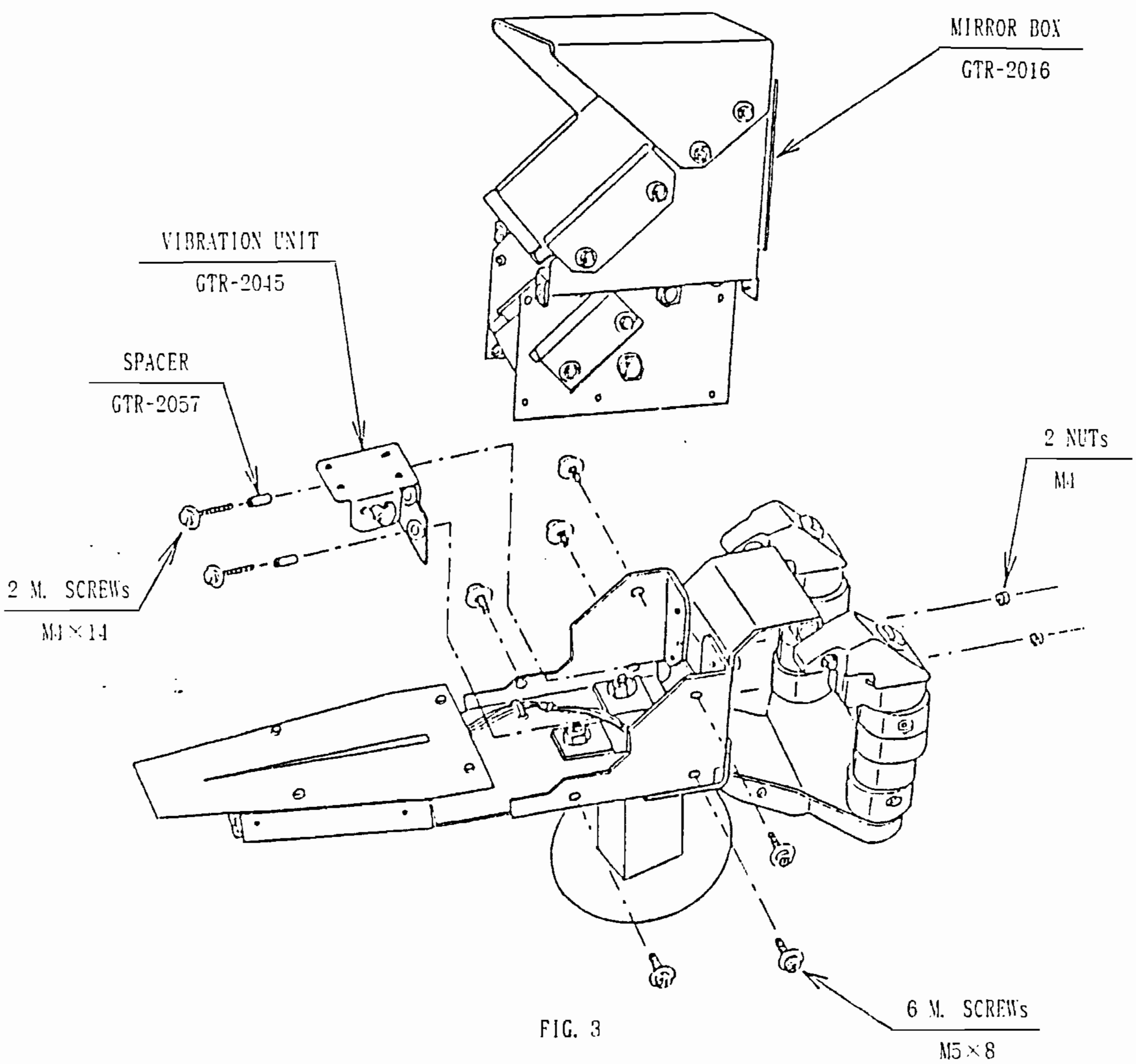


FIG. 3

(4) REMOVING THE MOTOR

① Take off the 4 machine screws (M3 × 6) and remove the MOTOR COVER.
② Take off the 2 SET SCREWs (M3 × 4) and remove the MOTOR WEIGHT.
③ Take off the 2 machine screws (M2 × 5) and remove the MOTOR.

CAUTION:
When replacing the MOTOR, be sure to wind a new cushion around the motor.
When installing the MOTOR WEIGHT, make sure that the SET SCREW (M3 × 4) and the MACHINE SCREW (M2 × 5) do not make contact with each other.

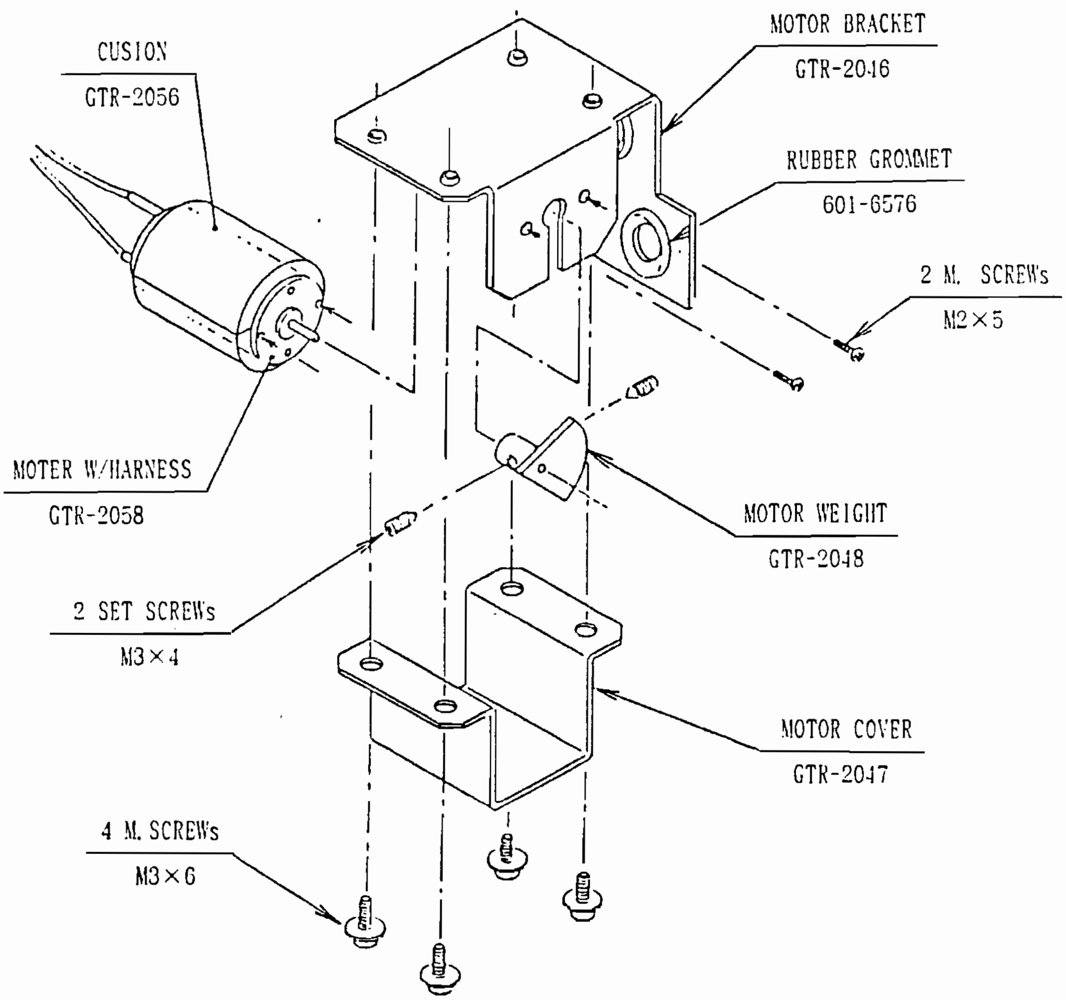


FIG. 4

REPLACING THE SHOT SW.

① Take off the CAP NUT, SPRING WASHER and FLAT WASHER (M4), then 2 TAMPERPROOF SCREWs (M5 × 30) and 2 NUTs black (M5).

② Remove the, HANDLE GRIP and replace the SW. BOARD (see FIG.5).

CAUTION:

When the grip is removed, the parts inside will be in a disassembled condition, therefore, be careful so as not to lose them.

After replacing the SW., make sure that both the LASER SW. and the SPECIAL WEAPON SW. turn ON/OFF accurately.

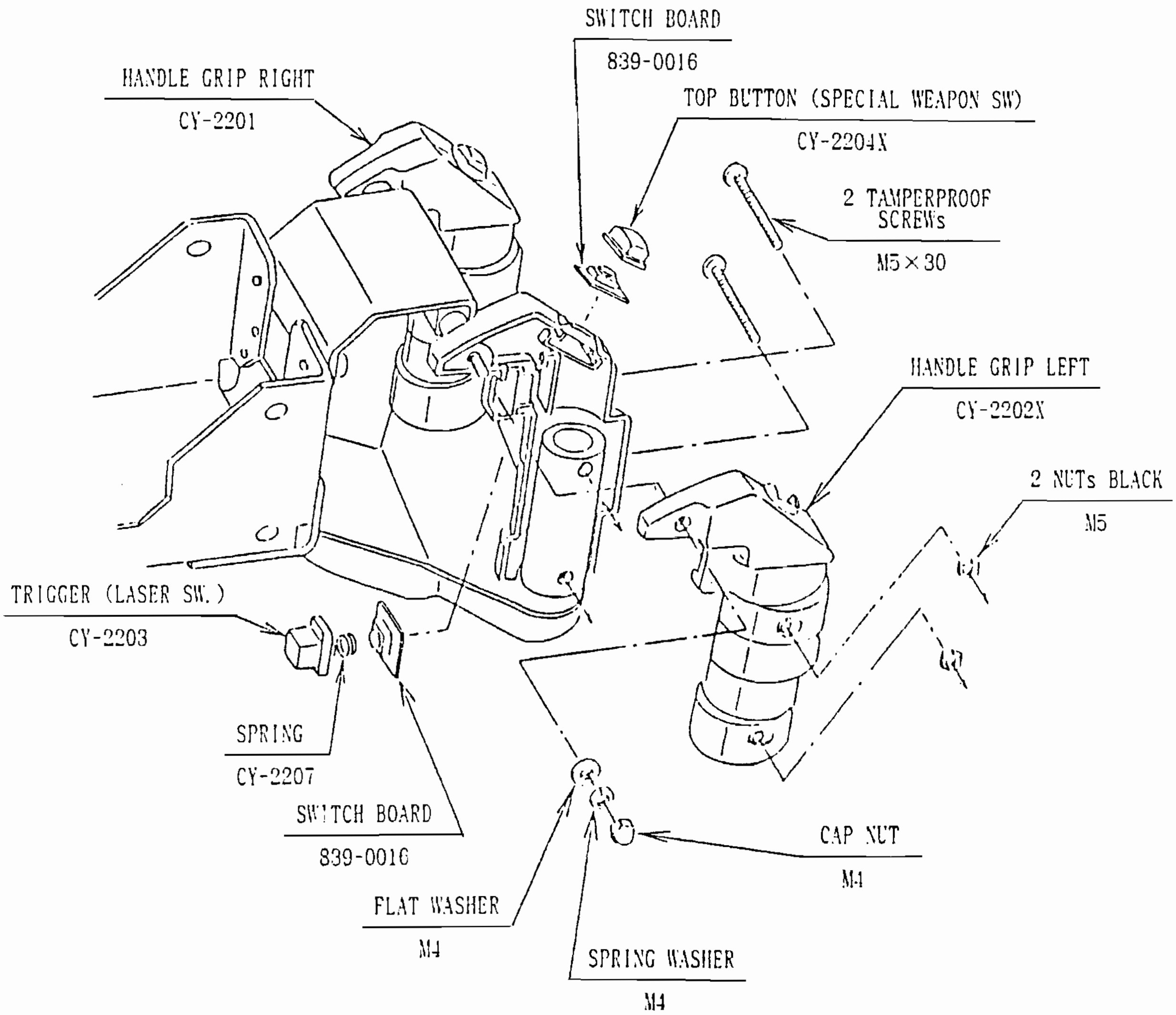


FIG. 5

REPLACING THE VOLUME

(1) REMOVING THE VOLUME FOR VERTICAL DIRECTIONS

① Take off the 2 machine screws (M4 × 12) and remove the VOLUME together with the VOLUME PLATE (see FIG. 6).

CAUTION:
For removing the VOLUME, see page 19 .

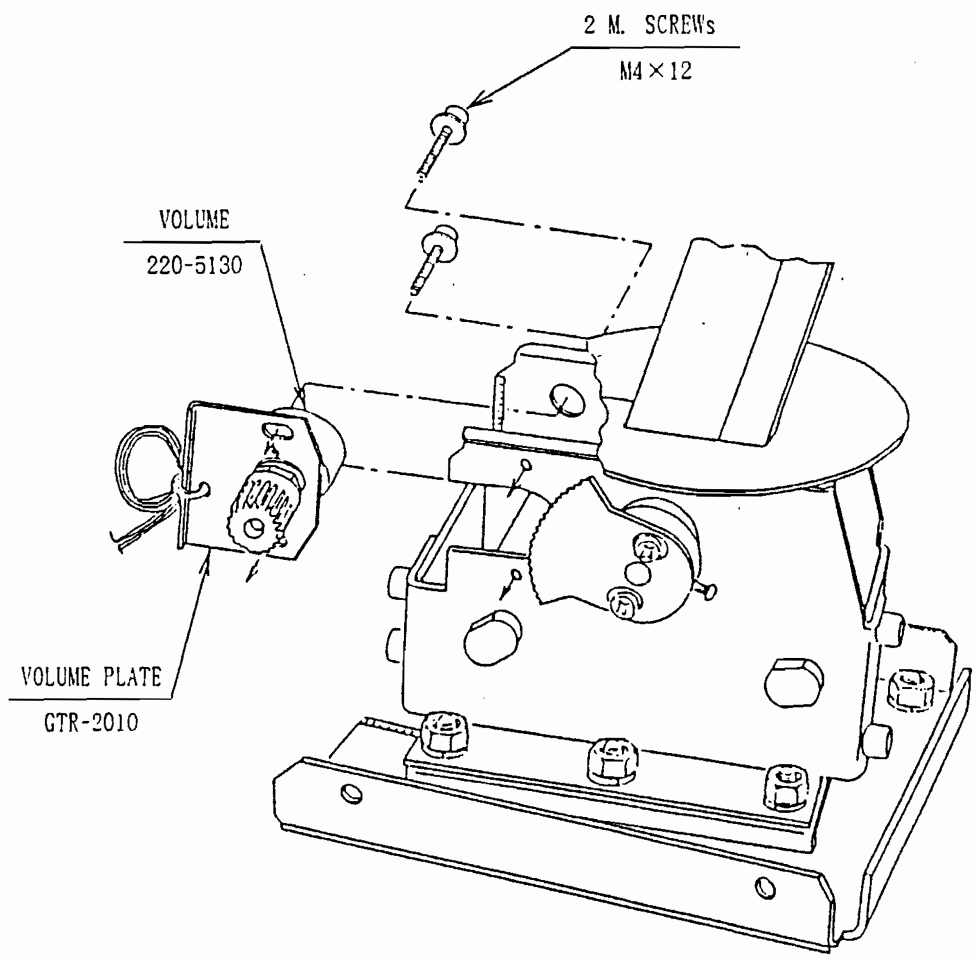


FIG. 6

(2) REMOVING THE VOLUME FOR HORIZONTAL DIRECTIONS

① Take off the 2 machine screws (M5 × 10) and remove the VOLUME together with the VOLUME BRACKET (see FIG.7).

CAUTION:
For removing the VOLUME, see page 19.

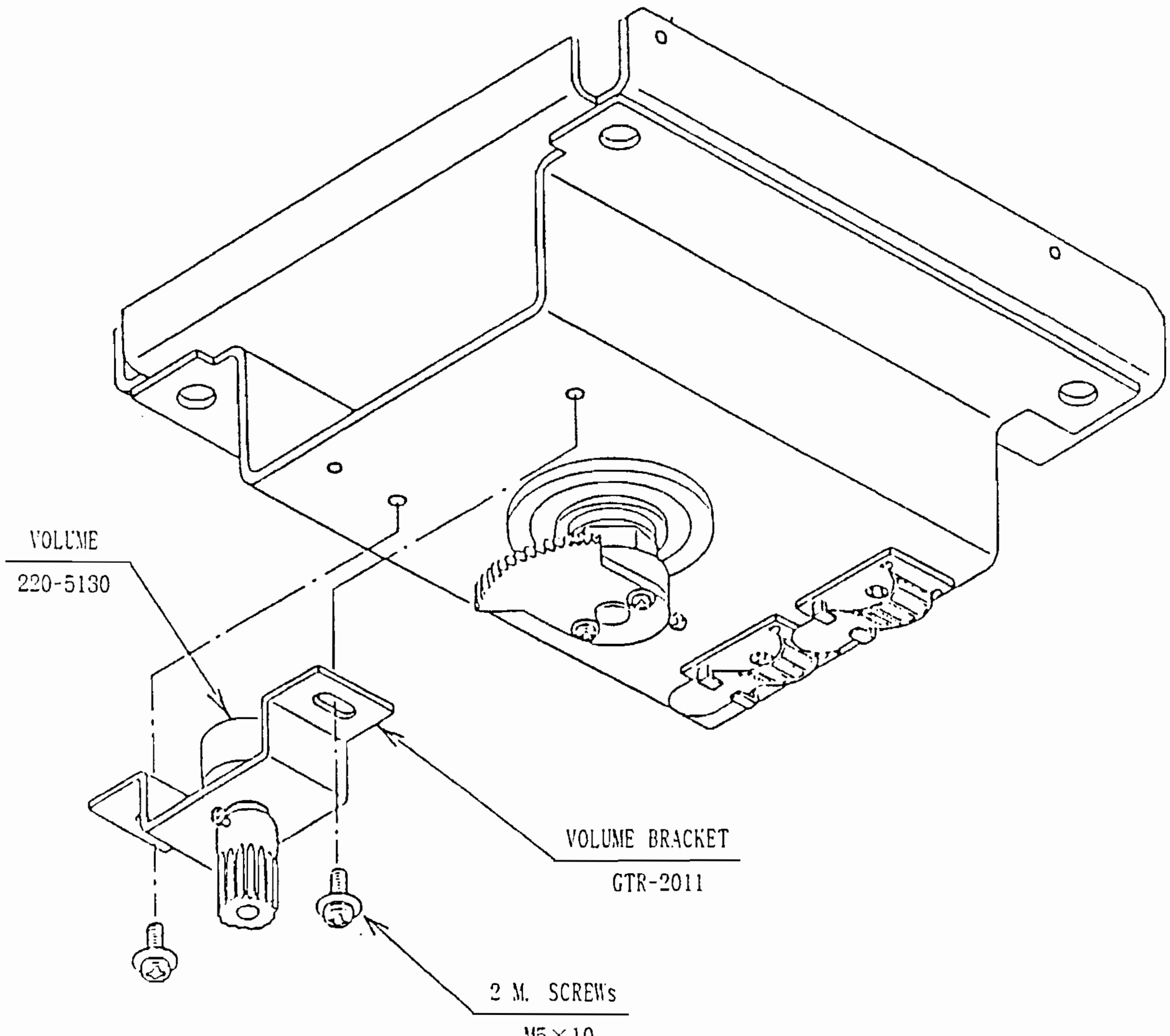


FIG. 7

(3) REMOVING THE VOLUME

① Take off the 2 SET SCREWs (M3×8) and pull out the GEAR.

② Take off the NUT (M9) and remove the VOLUME from the VOLUME PLATE.

③ Take off the VOLUME RING from the VOLUME.

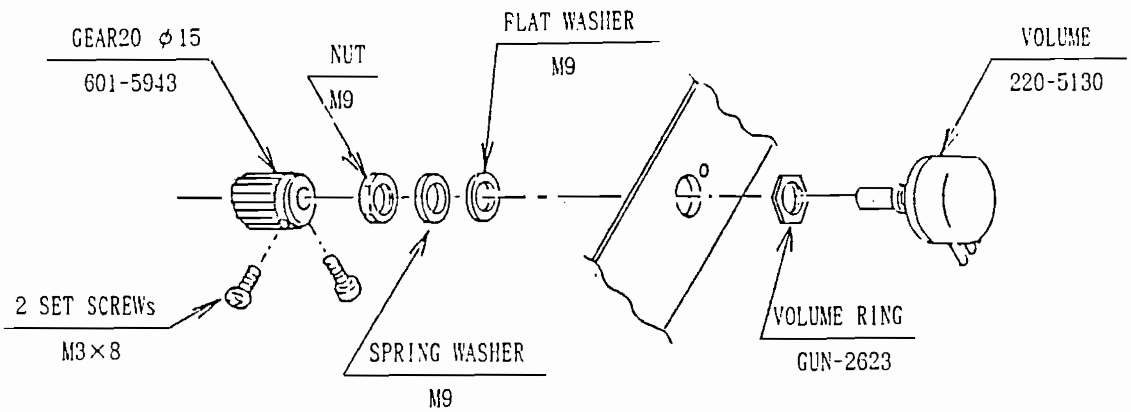


FIG. 8

(4) ADJUSTING THE VOLUME

① Loosen the 2 machine screws (M4×12) for the VOLUME for vertical directions or the 2 machine screws (M5×10) for the VOLUME for horizontal directions, then move the PLATE or BRACKET.

② Move the PLATE or the BRACKET and disengage the GEAR and the ADJUSTMENT GEAR. By turning the VOLUME and as shown in FIG.9, have the VOLUME's cut portion face the direction opposite to the ADJUSTMENT GEAR.

③ Fasten the 2 machine screws (M4 × 12) for the VOLUME for vertical directions or the 2 machine screws (M5 × 10) for the VOLUME for horizontal directions. At this time, make backlash adjustments (see FIG. 9).

④ Slowly vibrate the gun in vertical/horizontal directions and check to see that the gear movements did not result in exceeding the VOLUME's turning range.

⑤ For fine adjustments, refer to the TEST MODE.

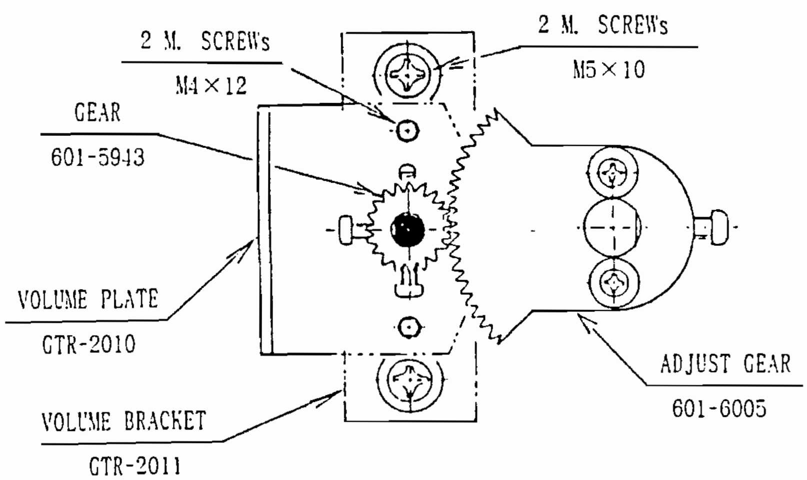
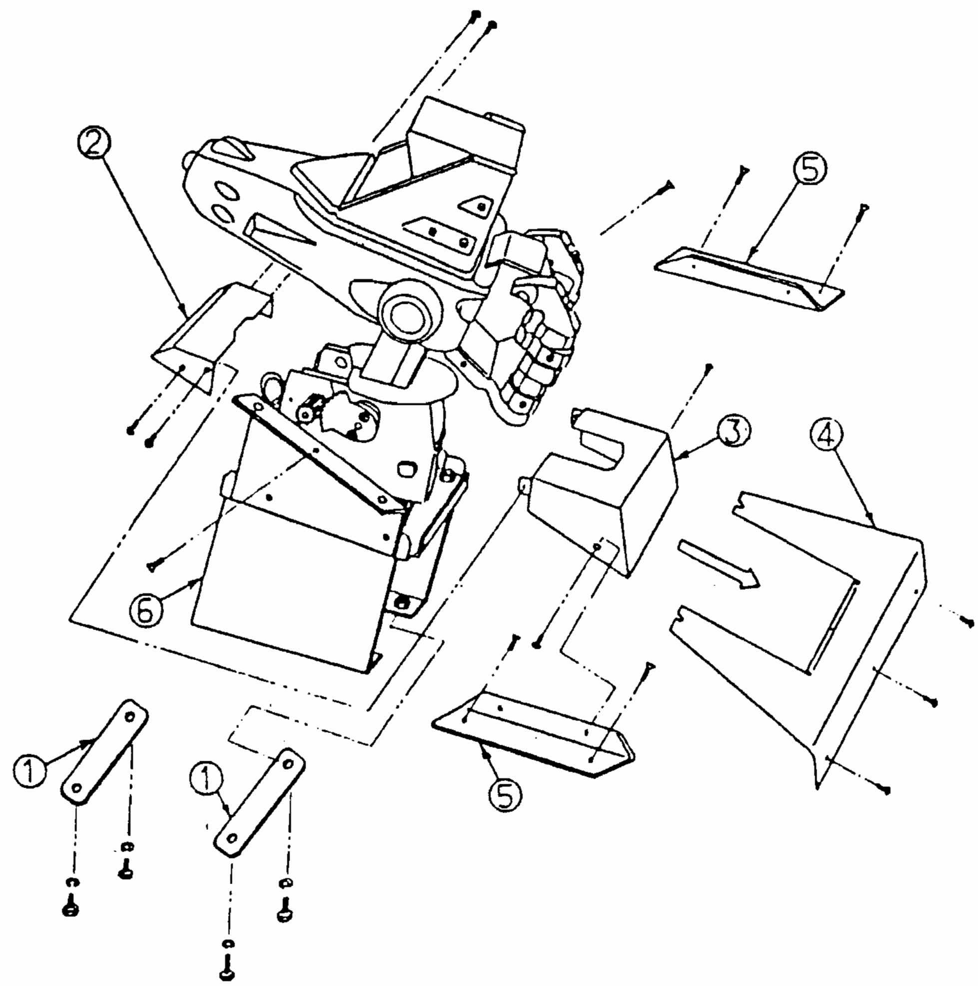


FIG. 9

REMOVING THE GUN



PROCEDURE

① Take off the 4 HEXAGON BOLTS (M8 × 35) AND THE 4 SPRING WASHERs (M8) which secure the 2 mechanism holders.

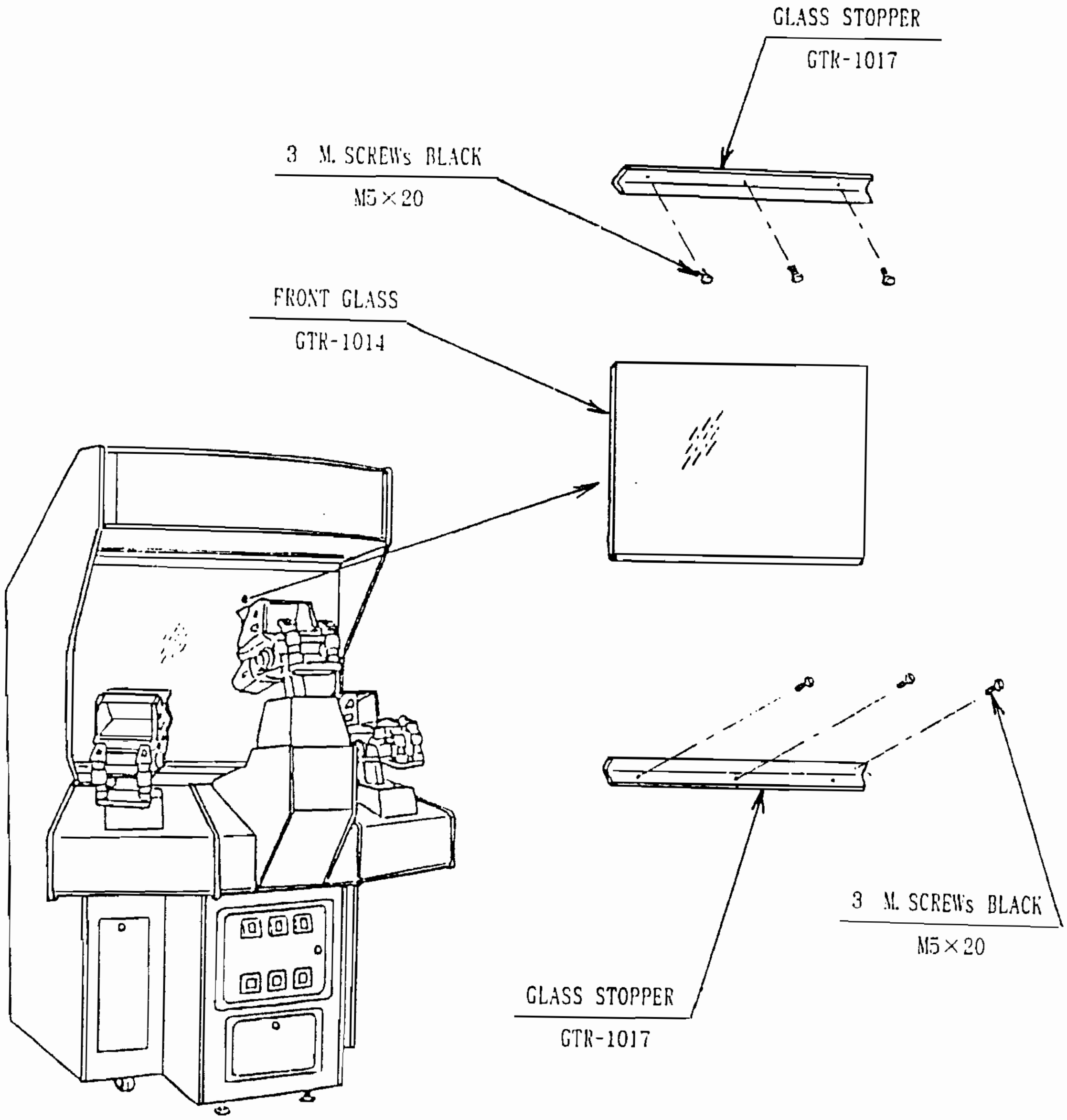
②③Take off a total of 6 TAMPERPROOF SCREWS (M4 × 6) which secure the 2 mechanism covers.

④ Take off the 3 machine screws black (M4 × 18) which secure the DESIGN PANEL. Loosen the 4 upper TAMPERPROOF SCREWs (M4) and remove the PANEL.

⑤ Take off a total of 4 machine screws (M4 × 16) which secure the 2 holders.

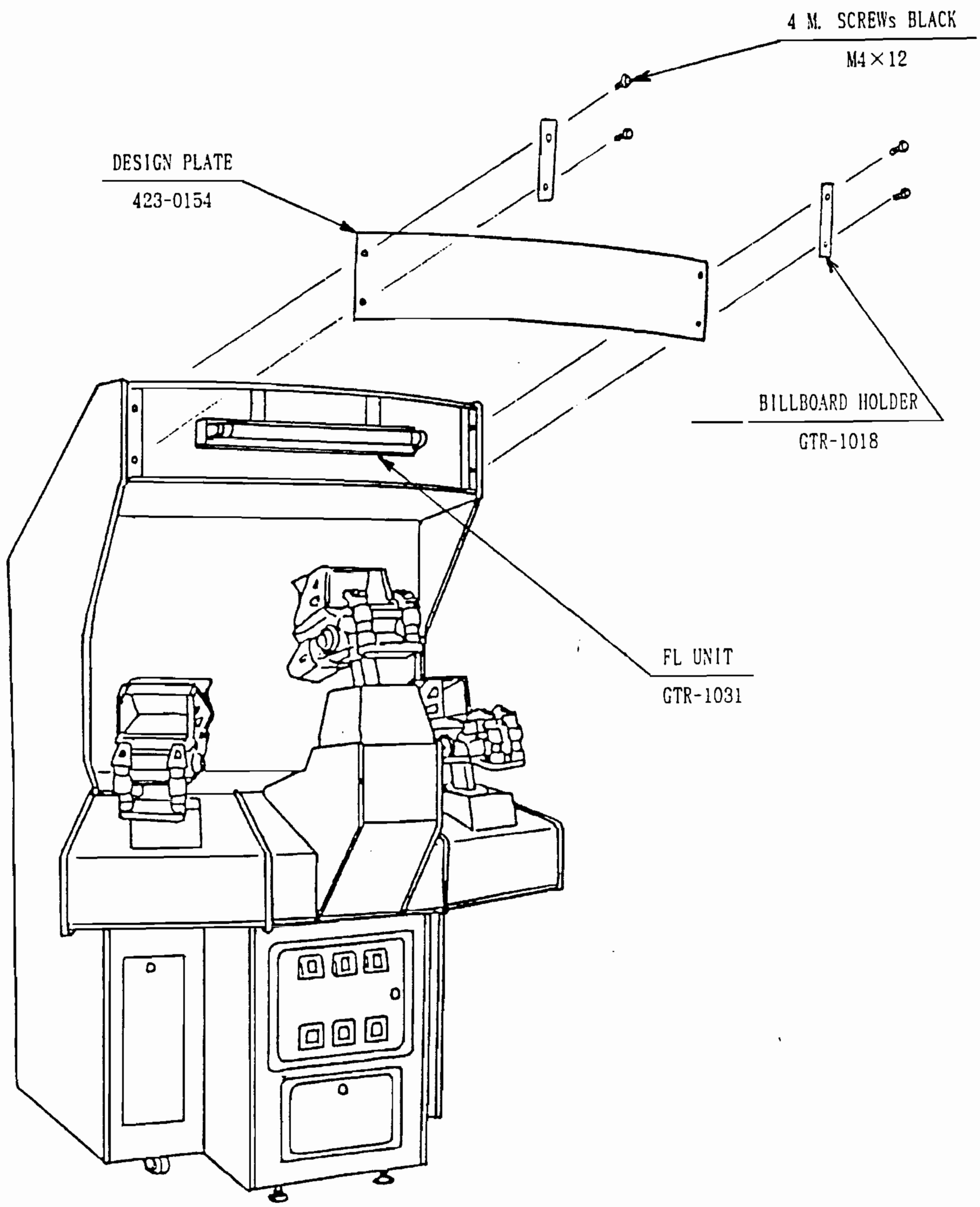
⑥ Take off the 2 machine screws (M4 × 16), disconnect the 5 CONNECTORs for wiring and remove the GUN MECHANISM.

CLEANING THE MONITOR



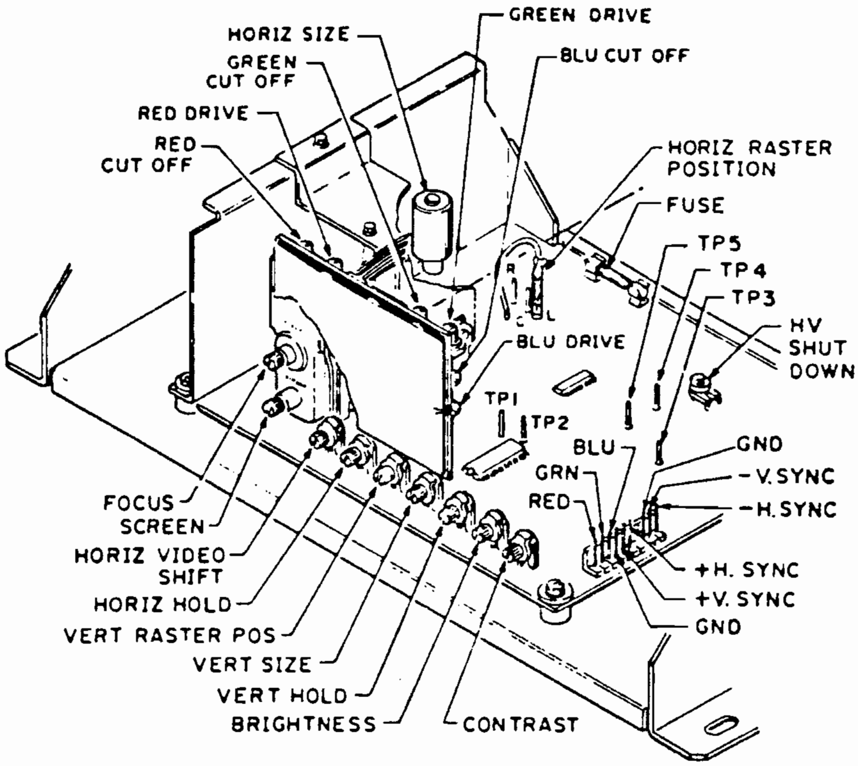
Take off a total of 6 machine screws black which secure the glass stopper (UP and DOWN), take out the FRONT GLASS and clean the monitor screen and the mirror.

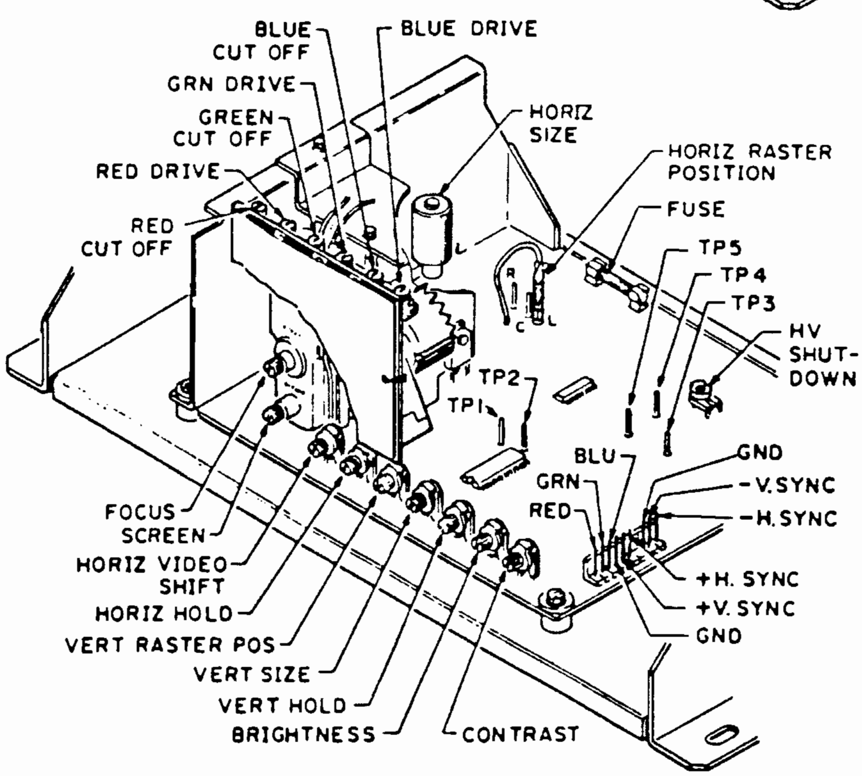
REPLACING THE FLUORESCENT LAMP



FLUORESCENT LAMP REPLACING PROCEDURE

Take off the 4 machine screws black (M4 × 12) which secure the BILLBOARD HOLDER, remove the DESIGN PLATE and replace the 20W FLUORESCENT LAMP.





MONITOR ADJUSTMENTS

TEST MODE

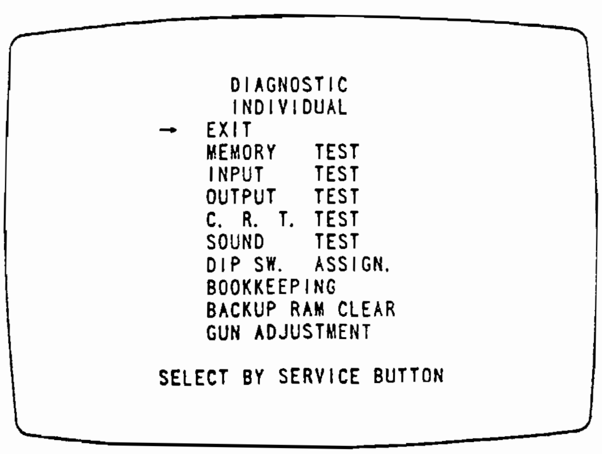
This test mainly checks the operation of game PCB's, discovers defects if any, and also checks monitor colors and audio quality. In addition, the test indicates dip SW assignment and has a Bookkeeping function.

TEST PROGRAM

(1) Memory Test : Checks the EPROM programs and RAM Area.
(2) Input Test : Tests the operation of COIN, LASER, SERVICE switches, etc.
(3) Output Test : To check LASER, MOTOR function.
(4) CRT Test : To check the on-monitor colors.
(5) Sound Test : Checks the quality of the synthesized sound transmitted from the PCB.
(6) Dip Switch Assignment : Indicates dip switch assignments.
(7) Bookkeeping : Indicates data on average score and play time.
(8) Backup RAM Clear : Clears Bookkeeping memory.
(9) GUN Adjustment : GUN SIGHTING ADJUSTMENT.

1 . Selection of TEST ITEMS

(1) Push the TEST SW to cause the following TEST ITEM MENU to appear :

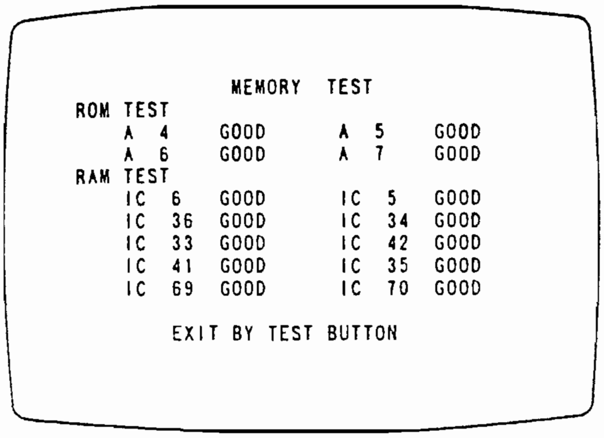


(2) By pushing the LEFT SERVICE SW, bring the arrow mark "→" to the desired item and press the TEST button.

(3) When the test has been completed, bring "→" to EXIT and push the TEST button.

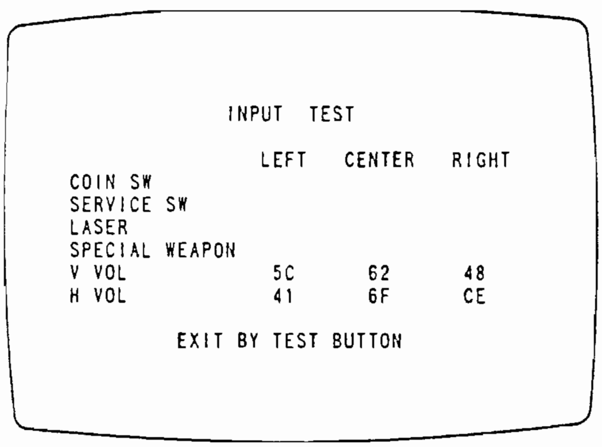
2. TEST ITEMS AND DESCRIPTION

(1) MEMORY TEST



Checks the PCB's MEMORY ICs. When the IC is in good operating condition, "GOOD" will be indicated. If there exists any malfunctioning of the IC's, "BAD" will be indicated.

(2) INPUT TEST



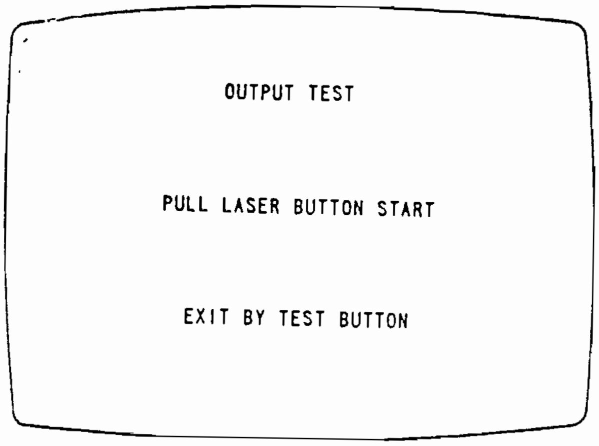
① Operate each switch. When the "OFF" condition is changed to "ON" , the corresponding switch is in good working order.

② However, when the value shown is lower than 00 or higher than FF, make VOLUME adjustments.

③ However, when the value shows lower than 00 or higher than FF, make VOLUME adjustments.

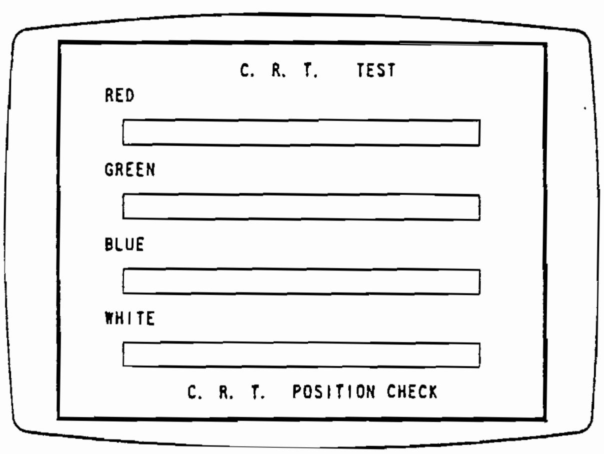
* For gun sighting adjustments, refer to ITEM 17.2. (9) GUN ADJUSTMENT.

(3) OUTPUT TEST



Check for the LASER beam and VIBRATION MOTOR functions.
Press each player's LASER button to have them function.

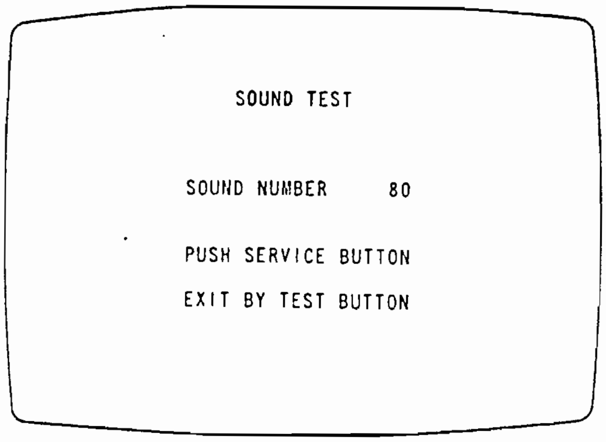
(4) C. R. T. TEST



① C. R. T. POSITION
Checks the C.R.T. position.
Make sure that the on-screen corners are consistent and then make size adjustments.

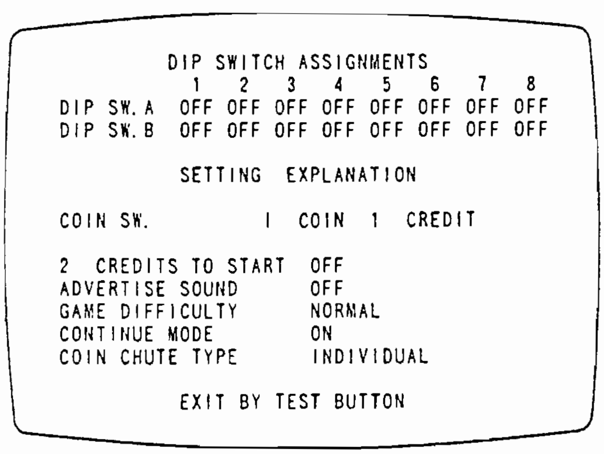
② color check
(The color becomes brighter from the right to the left.)

(5) SOUND TEST



When te test has been completed, push TEST SW button.

(6) DIP SW ASSIGN



① Present setting of each dip switch

② Coin switch setting

③ OFF: Starts with 1 CREDIT
ON: Starts with 2 CREDITS, continues with 1 CREDIT

④ Advertise sound

⑤ Game difficulty

⑥ To continue game or not

⑦ Type of COIN CHUTE
Normally, turn it OFF to INDIVIDUAL.

(7) BOOKKEEPING

DIAGNOSTIC
BOOKKEEPING (PAGE 1)
CREDIT REPORT

COIN SW LEFT	1
COIN SW CENTER	0
COIN SW RIGHT	1
COIN CREDITS	2
SERVICE SW LEFT	5
SERVICE SW CENTER	1
SERVICE SW RIGHT	0
SERVICE CREDITS	6
TOTAL CREDITS	8

PUSH SERVICE BUTTON

① Usage frequency of each COIN CHUTE
② Total COIN CHUTE usage frequency
③ Usage frequency of each SERVICE SW.
④ Total SERVICE SW. usage frequency
⑤ Total credits

Press the SERVICE SW button to display the following :

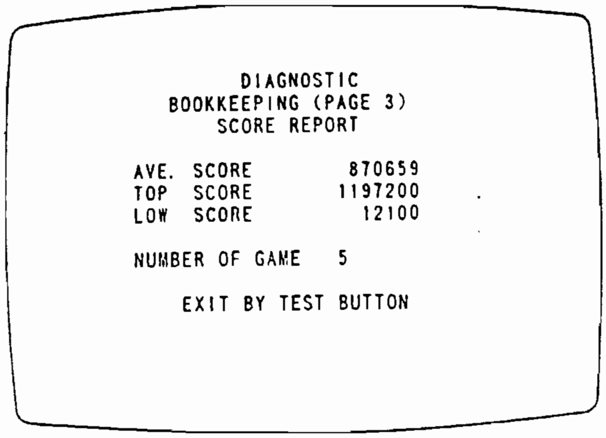
DIAGNOSTIC
BOOKKEEPING (PAGE 2)
TIME REPORT

TOTAL TIME	0H	44M	19S
GAME TIME			
TOTAL	0H	20M	56S
AVERAGE	0H	7M	43S
LONGEST	0H	13M	47S

PUSH SERVICE BUTTON

① Machine's total energized time
② Total game play time
③ Average game play time
④ Longest game play time

Press the SERVICE SW button to display the following :



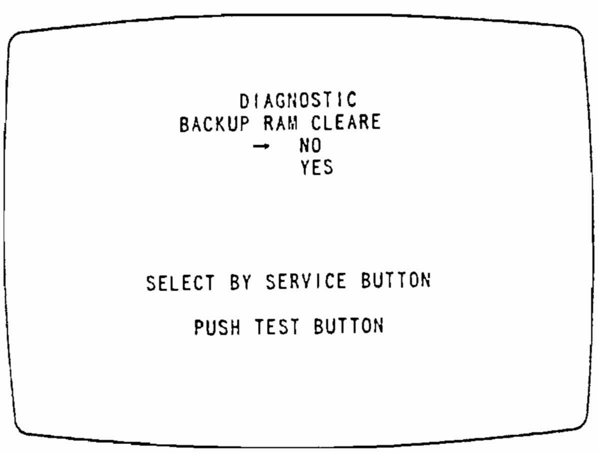
① All players' average score

② Highest score

③ Lowest score

④ Total number of game plays

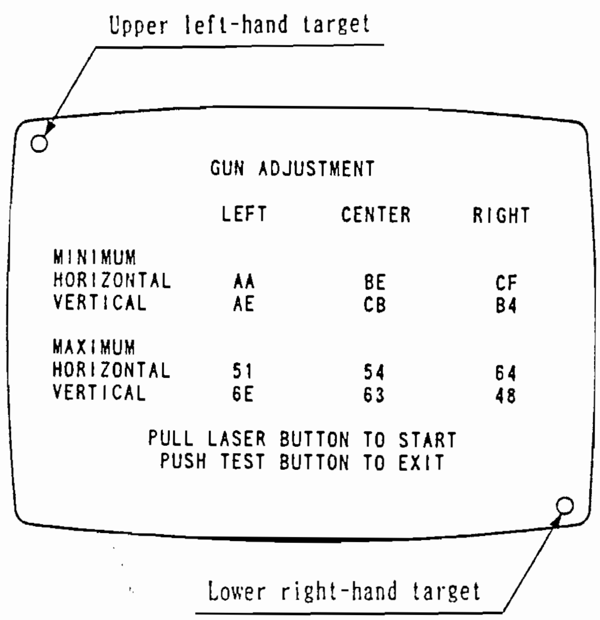
(8) BACKUP RAM CLEAR



The BOOKKEEPING data can be cleared. When clearing, bring "→" to "YES" and when not clearing, to "NO," by using the SERVICE SW, and then push the TEST button

(9) GUN ADJUSTMENT

* After replacing the MAIN BD. and repairing the GUN UNIT, be sure to make sighting adjustments in this mode.



ADJUSTING PROCEDURE

① Press the LASER button of the GUN that you desire to make adjustments to.

② The upper left-hand target flashes. Have the gun's LASER beam match the target and press the LASER button.

③ Next, the lower right-hand button flashes. Similarly aim at the target and press the LASER button.

④ When you desire to make adjustments for the other guns also, repeat the above procedure ① to ③.

DIP SWITCH SETTING & I/O

COIN/CREDIT OPTION SWITCH SETTING — DIP SW 1

OPTION	1	2	3	4	5	6	7	8
1 COIN 1 CREDIT	OFF	OFF	OFF	OFF	NOT USED (ALL OFF)			
1 COIN 2 CREDITS	ON	OFF	OFF	OFF				
1 COIN 3 CREDITS	OFF	ON	OFF	OFF				
1 COIN 4 CREDITS	ON	ON	OFF	OFF				
1 COIN 5 CREDITS	OFF	OFF	ON	OFF				
1 COIN 6 CREDITS	ON	OFF	ON	OFF				
2 COINS 1 CREDIT	OFF	ON	ON	OFF				
3 COINS 1 CREDIT	ON	ON	ON	OFF				
4 COINS 1 CREDIT	OFF	OFF	OFF	ON				
2 COINS 3 CREDITS	ON	OFF	OFF	ON				
2 COINS 1 CREDIT 4 COINS 2 CREDITS 5 COINS 3 CREDITS 6 COINS 4 CREDITS	OFF	ON	OFF	ON				
2 COINS 1 CREDIT 4 COINS 3 CREDITS	ON	ON	OFF	ON				
1 COIN 1 CREDIT 2 COINS 2 CREDITS 3 COINS 3 CREDITS 4 COINS 4 CREDITS 5 COINS 6 CREDITS	OFF	OFF	ON	ON				
1 COIN 1 CREDIT 2 COINS 2 CREDITS 3 COINS 3 CREDITS 4 COINS 5 CREDITS	ON	OFF	ON	ON				
1 COIN 1 CREDIT 2 COINS 3 CREDITS	OFF	ON	ON	ON				
FREE PLAY	ON	ON	ON	ON	ON	ON	ON	ON
	COIN SWITCH #1				COIN SWITCH #2			

OPTION SWITCH SETTING — DIP SW 2

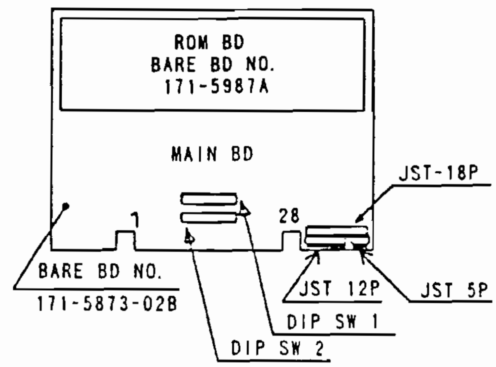
OPTION		1	2	3	4	5	6	7	8
1 CREDIT TO START		OFF							
2 CREDITS TO START (1 CREDIT TO CONTINUE)		ON							
ADVERTISE SOUND	OFF		OFF						
	ON		ON						
GAME DIFFICULTY	EASIEST			OFF	OFF	ON			
	EASIER			OFF	ON	OFF			
	EASY			ON	OFF	OFF			
	NORMAL			OFF	OFF	OFF			OFF
	HARD			ON	ON	OFF			
	HARDER			OFF	ON	ON			
	HARDEST			ON	OFF	ON			
	EXTRA HARDEST			ON	ON	ON			
CONTINUE MODE	ON						OFF		
	OFF						ON		
COIN CHUTE	INDIVIDUAL							OFF	
	COMMON							ON	

PIN ASSIGNMENT

COMPONENT SIDE			SOLDER SIDE
GND	1	A	GND
GND	2	B	GND
+5V	3	C	+5V
+5V	4	D	+5V
(NOT USED)	5	E	(NOT USED)
+12V	6	F	+12V
KEY	7	H	KEY
COIN METER 1	8	J	COIN METER 2
LP LED	9	K	CP LED
SPEAKER (+)	10	L	SPEAKER (-)
(NOT USED)	11	M	(NOT USED)
RED	12	N	GREEN
BLUE	13	P	SYNC
GND	14	R	(NOT USED)
TEST	15	S	(NOT USED)
LP COIN	16	T	CP COIN
LP SERVICE	17	U	CP SERVICE
(NOT USED)	18	V	(NOT USED)
(NOT USED)	19	W	(NOT USED)
RP LASER	20	X	(NOT USED)
RP S.WEAPON	21	Y	(NOT USED)
LP LASER	22	Z	(NOT USED)
LP S.WEAPON	23	a	(NOT USED)
CP LASER	24	b	(NOT USED)
CP S.WEAPON	25	c	(NOT USED)
RP SERVICE	26	d	RP COIN
GND	27	e	GND
GND	28	f	GND

(JAMMA)

56P P=3.96mm



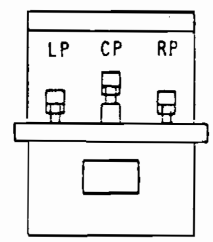
※ COIN CHUTE MODE

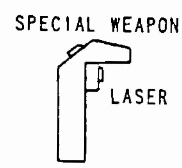
INDIVIDUAL :

Used for the cabinet of the INDIVIDUAL COIN CHUTE type which allows each chute to accept coins. For setting COIN/CREDIT combination, use only No.1~No.4 of DIP SW 1 and turn No.5~No.8 OFF. However, when setting to FREE PLAY, turn all of No.1~No.8 of DIP SW 1 ON.

COMMON :

Used for the cabinet of the COMMON chute type in which the acceptance of coins is done in common. In the COMMON setting, use either COIN LP or COIN CP.





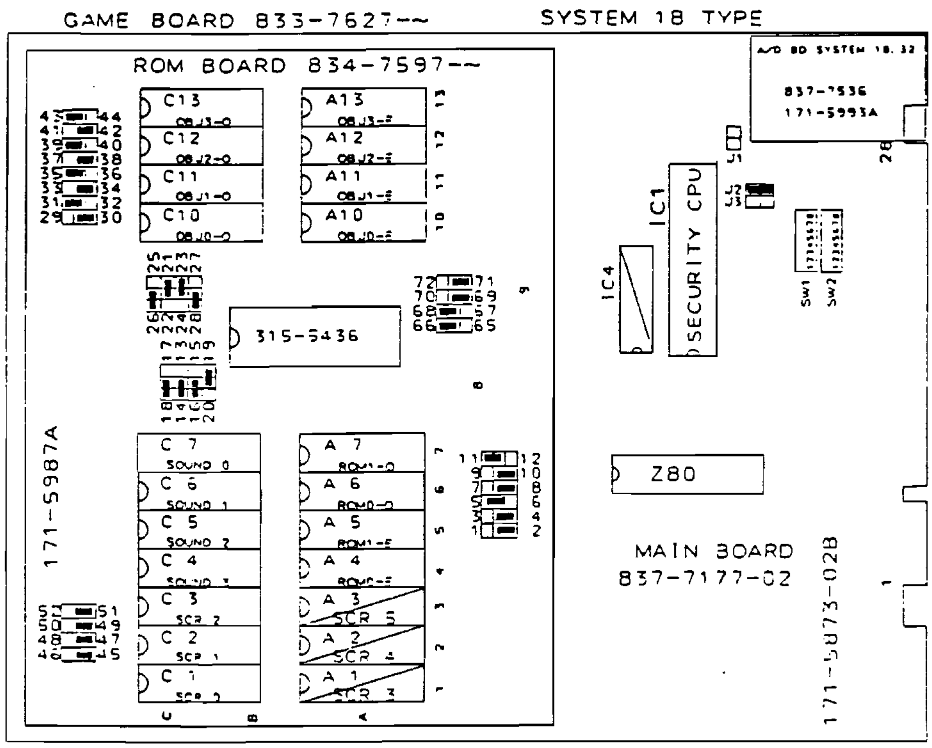
JST 18P

1	+5V
2	LP U/D
3	GND
4	+5V
5	LP L/R
6	GND
7	+5V
8	CP U/D
9	GND
10	+5V
11	CP L/R
12	GND
13	+5V
14	RP U/D
15	GND
16	+5V
17	RP L/R
18	GND

JST 12P

1	
2	LP MOTOR
3	CP MOTOR
4	RP MOTOR
5	
6	
7	
8	
9	
10	
11	RP LED
12	

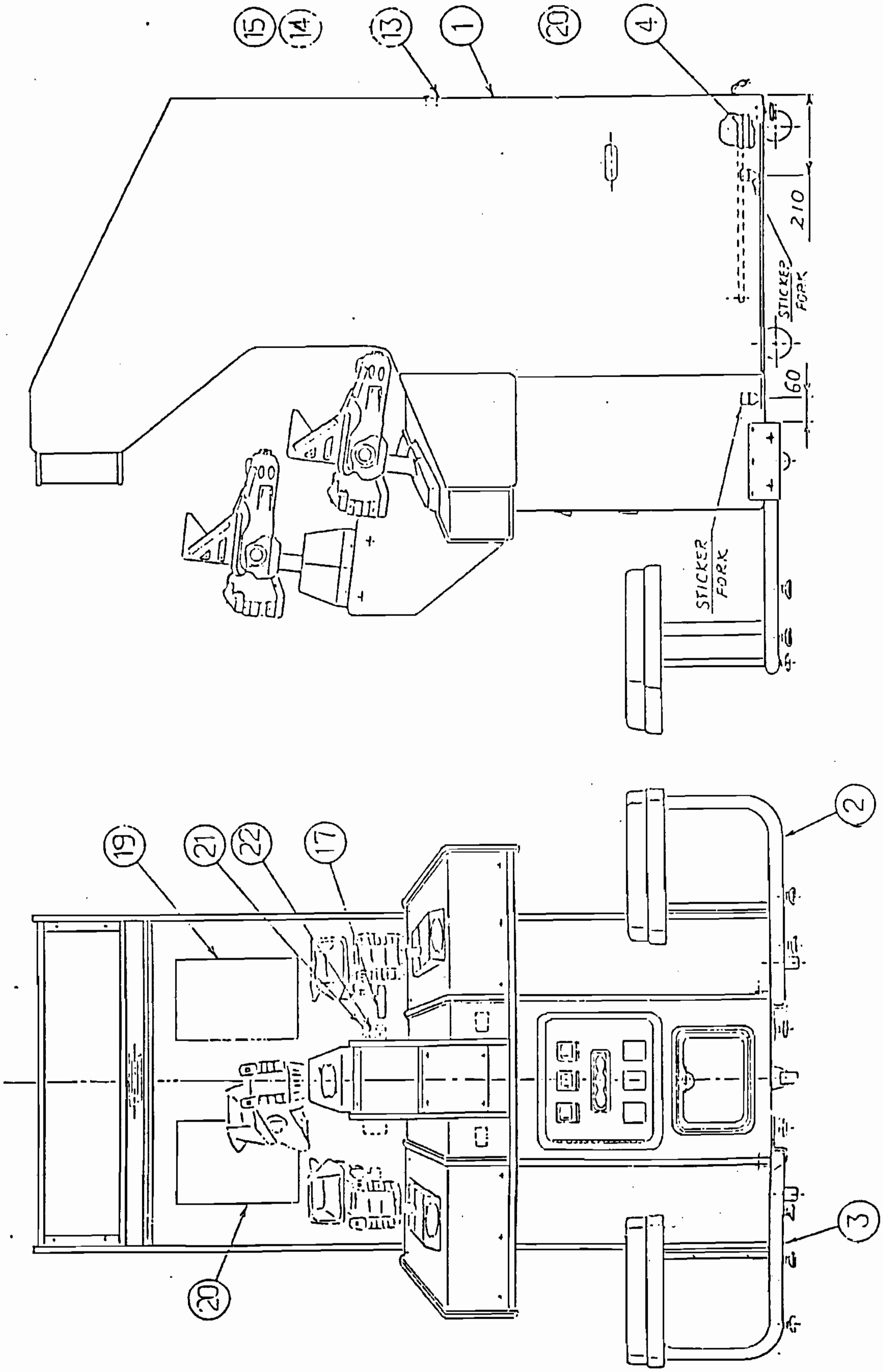
ROM LOCATIONS



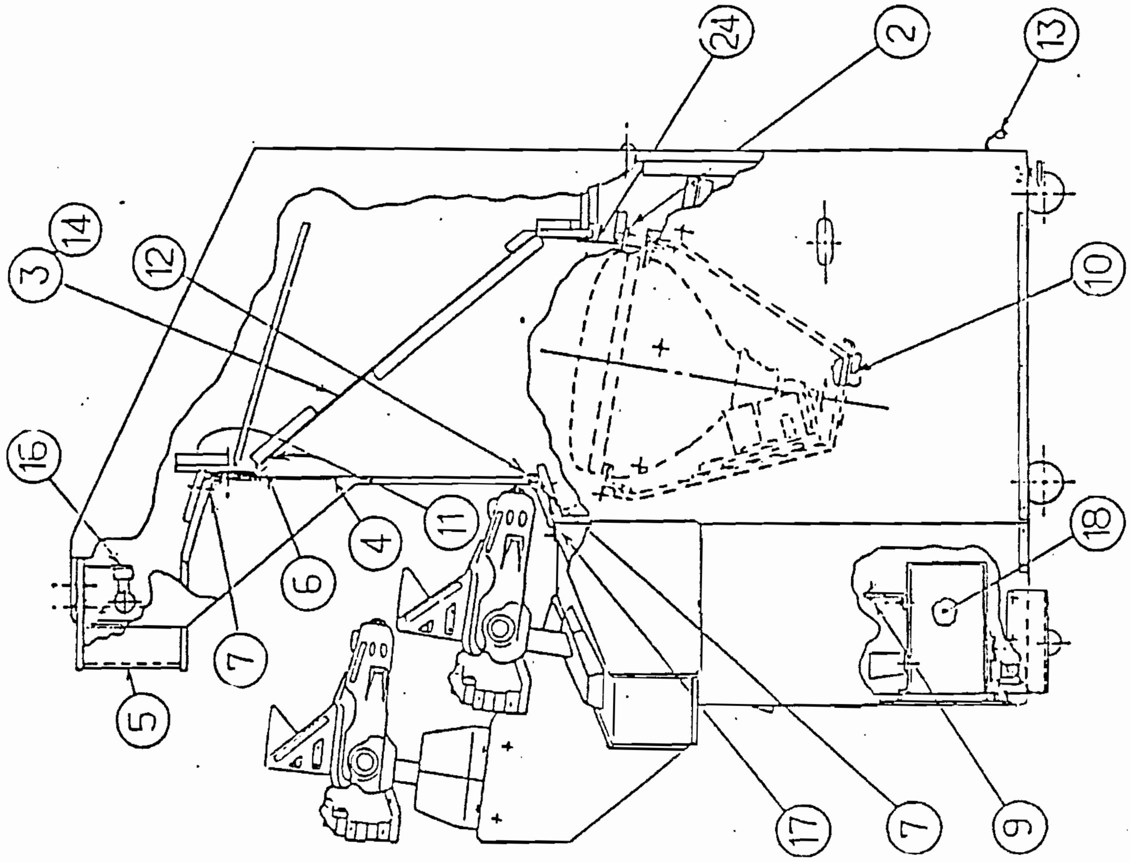
ROM POSITION	GAME BD No.		MAIN WORK	ROM TYPE
	833-7627-04	833-7627-05		
	ROM BD No.			
	834-7597-04	834-7597-05		
A1			SCR 3	
A2			SCR 4	
A3			SCR 5	
A4	EPR-13427	EPR-13429	ROM0-E	2M-15
A5	EPR-13411	EPR-13411	ROM1-E	2M-15
A6	EPR-13428	EPR-13437	ROM0-O	2M-15
A7	EPR-13413	EPR-13413	ROM1-O	2M-15
A10	EPR-13603	←	OBJ0-E	4M-20
A11	EPR-13421	←	OBJ1-E	4M-20
A12	EPR-13422	←	OBJ2-E	4M-20
A13	EPR-13423	←	OBJ3-E	4M-20
C1	EPR-13414	←	SCR 0	2M-20
C2	EPR-13415	—	SCR 1	2M-20
C3	EPR-13416	—	SCR 2	2M-20
C4	EPR-13418	—	SOUND 3	2M-15
C5	EPR-13419	←	SOUND 2	2M-15
C6	EPR-13420	←	SOUND 1	2M-15
C7	EPR-13417	—	SOUND 0	1M-15
C10	EPR-13604	←	OBJ0-O	4M-20
C11	EPR-13424	—	OBJ1-O	4M-20
C12	EPR-13425	—	OBJ2-O	4M-20
C13	EPR-13426	—	OBJ3-O	4M-20
IC1	317-0165	317-0166	SECURITY CPU	
NOTE	USA MASK TYPE	EXPORT MASK TYPE		

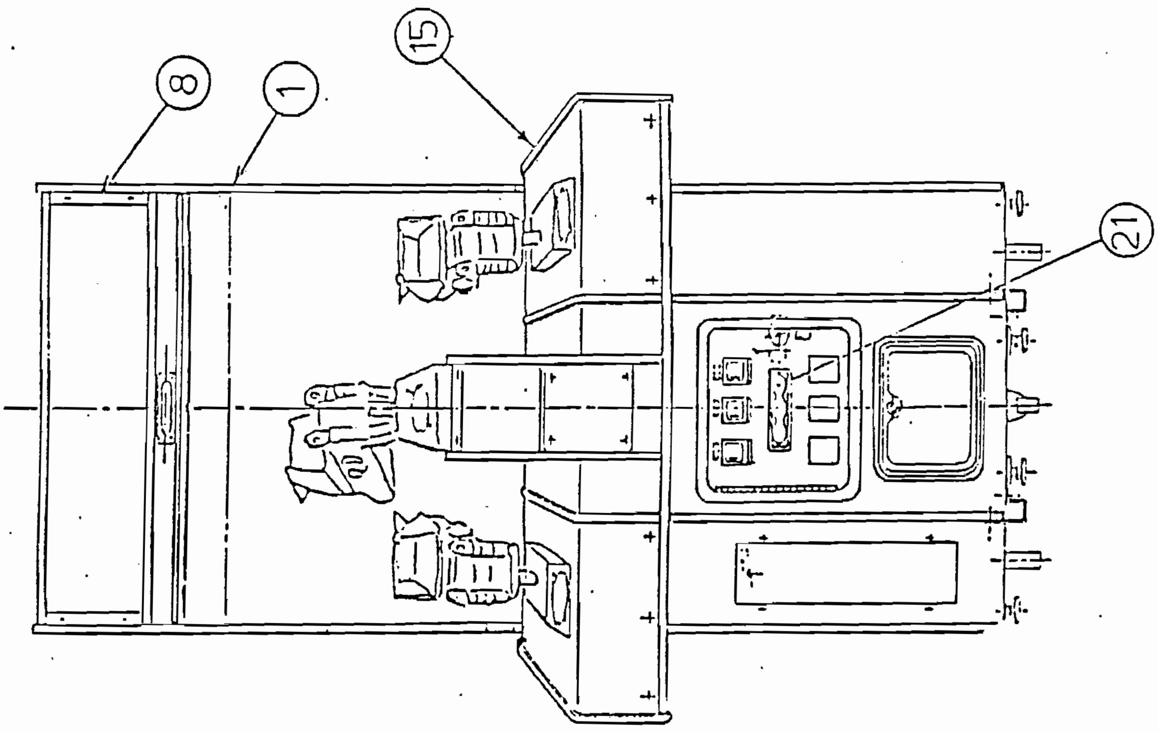
PARTS CATALOG

① TOP ASSY LASER GHOST (GTR-0000)

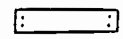
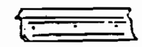
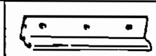
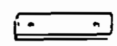
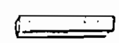
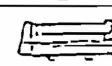
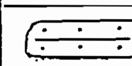
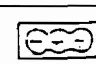
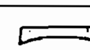


ASSY CABINET (GTR-1000)

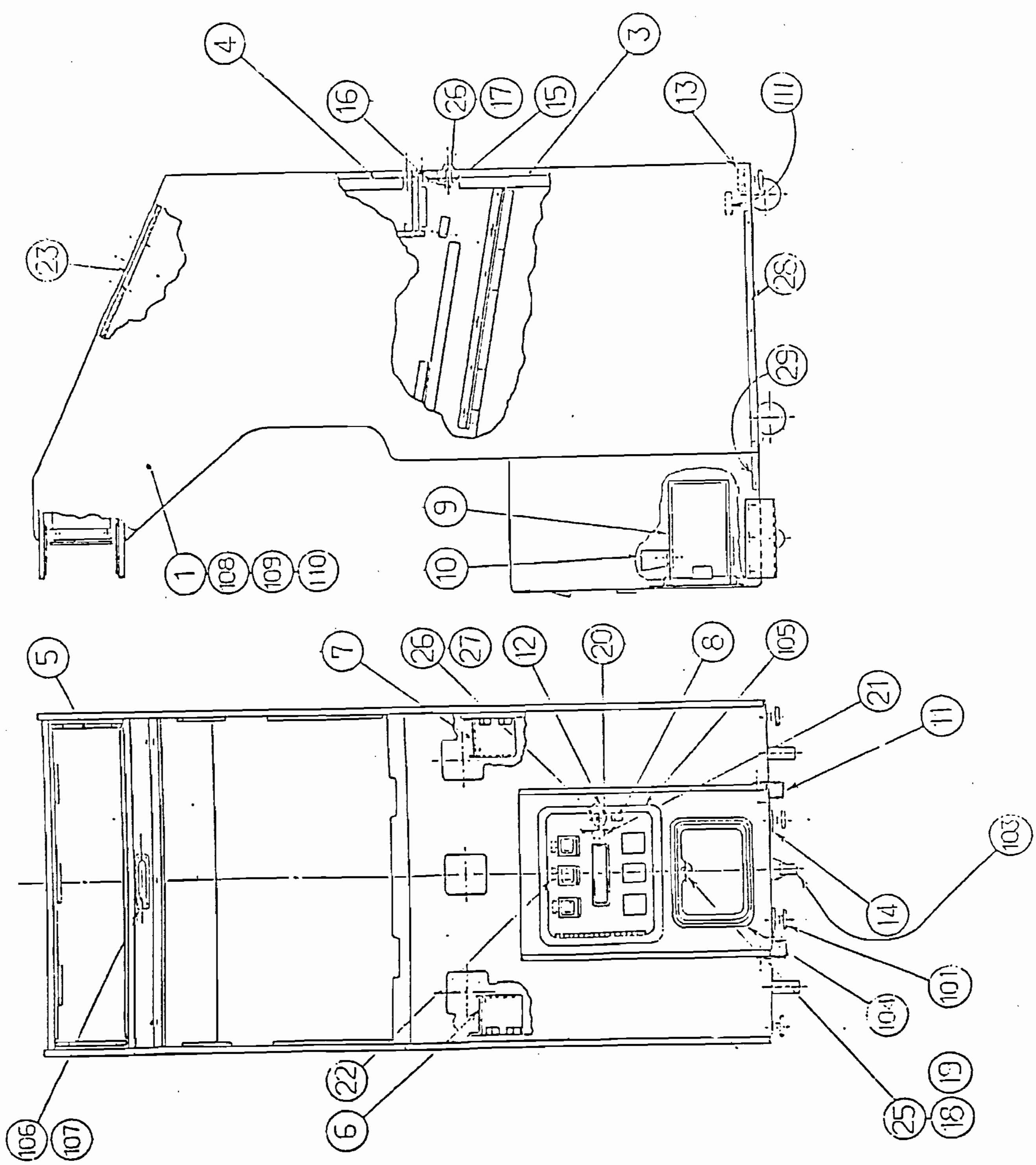




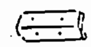
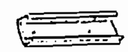
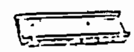
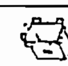
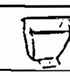
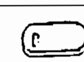
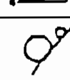
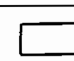
ASSY CABINET (GTR-1000)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-1001	ASSY SUBCABI	
2	GTR-1006	WOODEN MASK 822×500	
3	GTR-1035	MIRROR	
4	GTR-1014	FRONT GLASS	
5	423-0154	DESIGN PLATE LASER GHOST	
6	GTR-1016	HALF MIRROR HOLDER	
7	GTR-1017	GLASS STOPPER	
8	GTR-1018	BILLBOARD HOLDER	
9	GTR-1020	SW UNIT	
10	GTR-1022	ASSY MONITOR 26	
11	GTR-1025	RUBBER PACKING A	
12	GTR-1026	RUBBER PACKING B	
13	GTR-1028	AC UNIT	
14	GTR-1036	MIRROR SASH	
15	GTR-1200	ASSY CONTROL PANEL	
16	GTR-1031	FL UNIT	
17	GTR-1024	CONTROL PANEL STOPPER	
18	UCQ-1037	CASH BOX	
21	GTR-1030	STICKER BILL MAX CAROL	
24	GTR-1027	DESIGN SHEET BLACK	

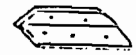
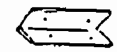
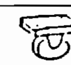
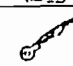
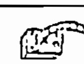
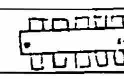
ASSY SUBCABI (GTR-1001)



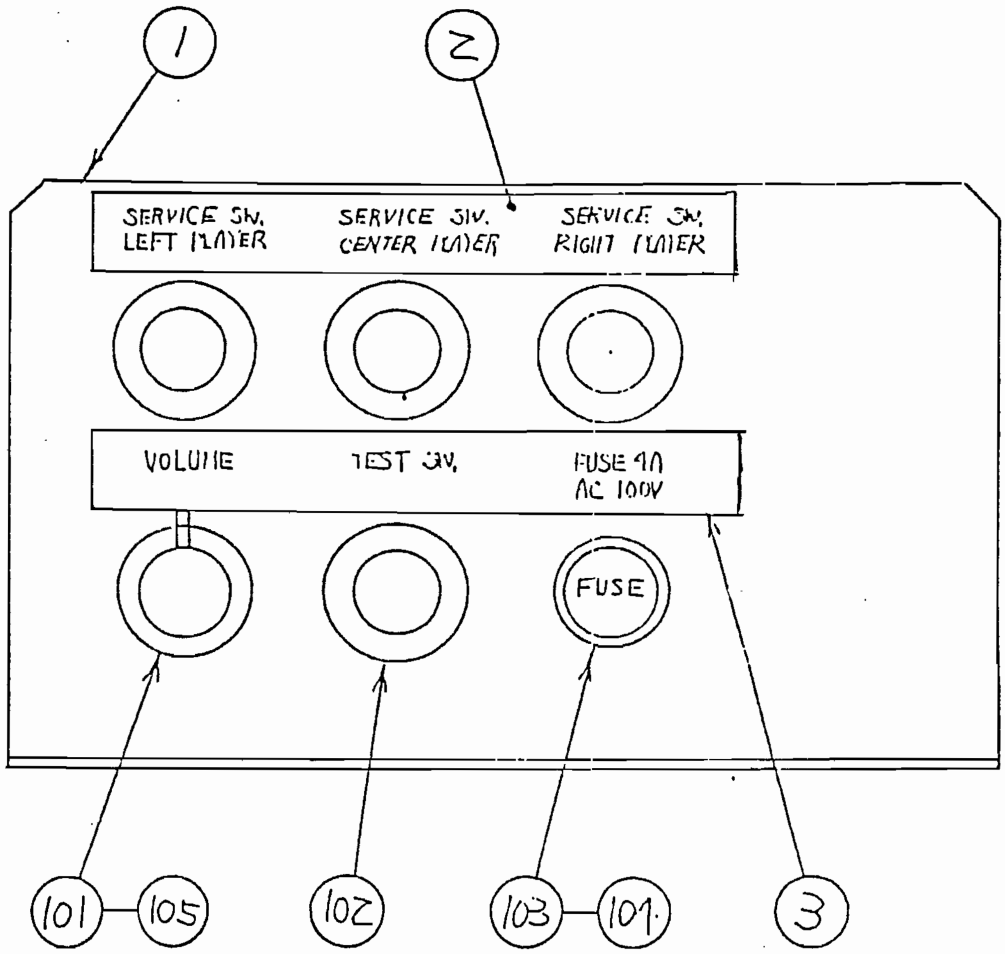
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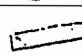
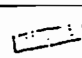
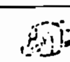
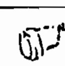
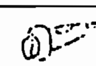
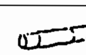
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-1037	WOODEN CABINET	
3	GTR-1004	BACK DOOR	
4	GTR-1034	BACK DOOR UPPER	
5	GTR-1019	BILLBOARD STOPPER	
6	GTR-1008	MONITOR HOLDER A	
7	GTR-1009	MONITOR HOLDER B	
9	GTR-1011	CASH BOX COVER	
10	GTR-1012	LOWER CHUTE	
11	GTR-1023	PIPE HOLDER	
12	280-5115	LKG TNG	
13	601-6558	LEG ADJ BRACKET	
14	601-6559	LEG ADJ PLATE	
18	DP-1167	TNG LKG	
19	HN-1050	SPACER RING	
20	105-5068	PLATE TONGUE STOPPER	
21	109-0045	HOLDER KEY TURBO UPR	
22	421-7501-02	STICKER 6.3V 0.15A	
23	117-5151	GURD PLATE 140×160	
25	220-5046-91	MAGNETIC LOCK W/KEYS	
27	220-5254	KEY MASTER FOR 220-5253	

ASSY SUBCABI (GTR-1001)

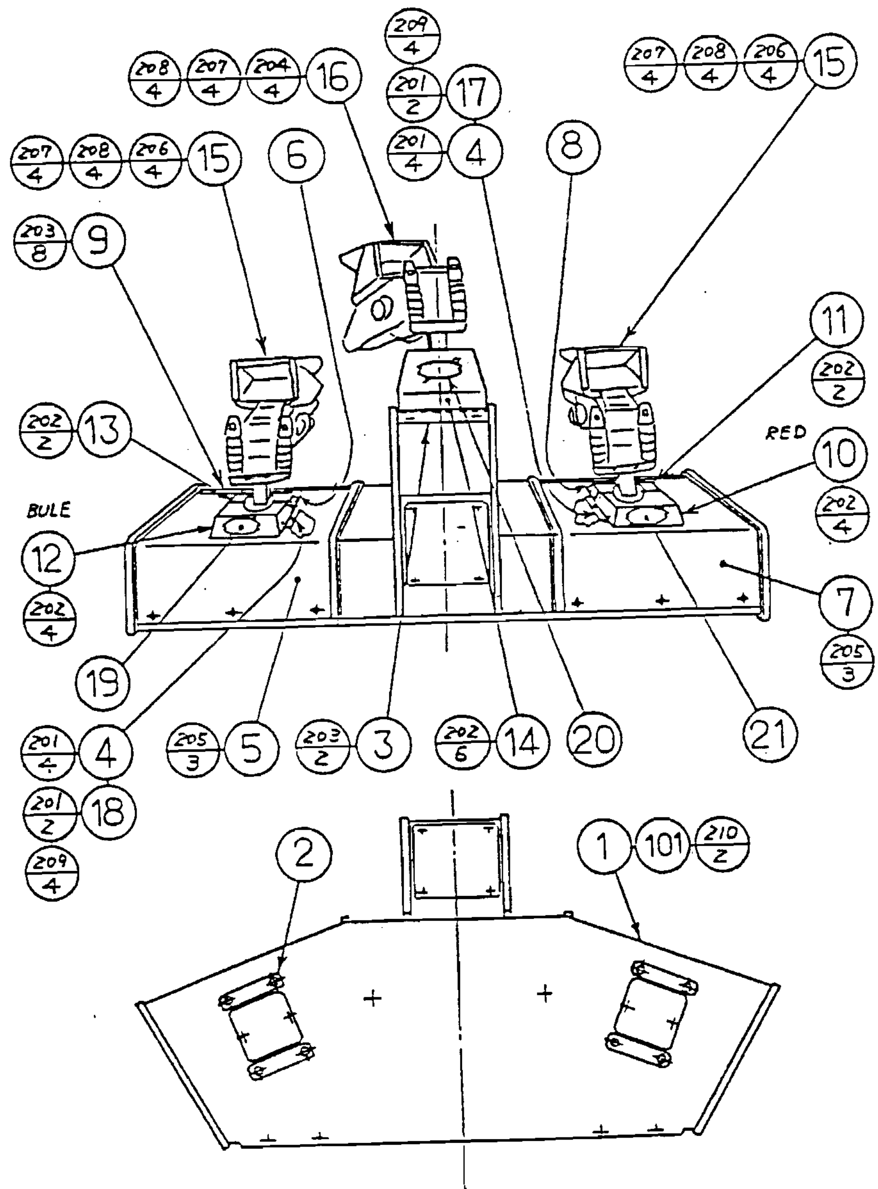
ITEM NO.	PART NO.	DESCRIPTION	NOTE
28	GPD-1014	CONER SASH A	
29	GTR-1033X	CONER SASH	
101	601-6063	LEG ADJUSTER ∅50	
103	601-6056	CASTER ∅50	
104	220-5220	CASH BOX DOOR	
105	220-5346-~	ASSY COIN CHUTE DOOR 3-SLOT W/HOLE ~	
106	130-5054	SPEAKER	
107	253-5343	SPEAKER NET FOR 130-5054	
108	280-0419	HARNESS LUG	
109	280-5008	CORD CLAMP ∅15	
110	280-5009	CORD CLAMP ∅21	
111	117-5166	TERMINAL 5P-5P SHORT	

SW UNIT (GTR-1020)

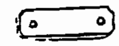
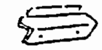
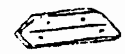
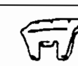
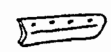
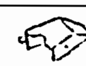
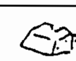
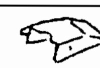
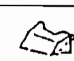
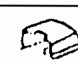
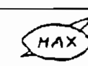
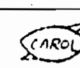
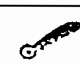


ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-1021	SW BRACKET	
2	421-7728-91	STICKER SW INSTR	
3	421-7729	STICKER VR & FUSE INSTR	
101	220-5219	RHEO STAT 100 OHM 10W	
102	509-5028	SW PB 1M	
103	514-5018-01	FUSE HOLDER UL F187 TYPE	
104	514-5036-4000	FUSE 6.4ø×30 400mA 125V 4A	
105	601-0042	KNOB 22mm	

ASSY CONTROL PANEL (GTR-1200)



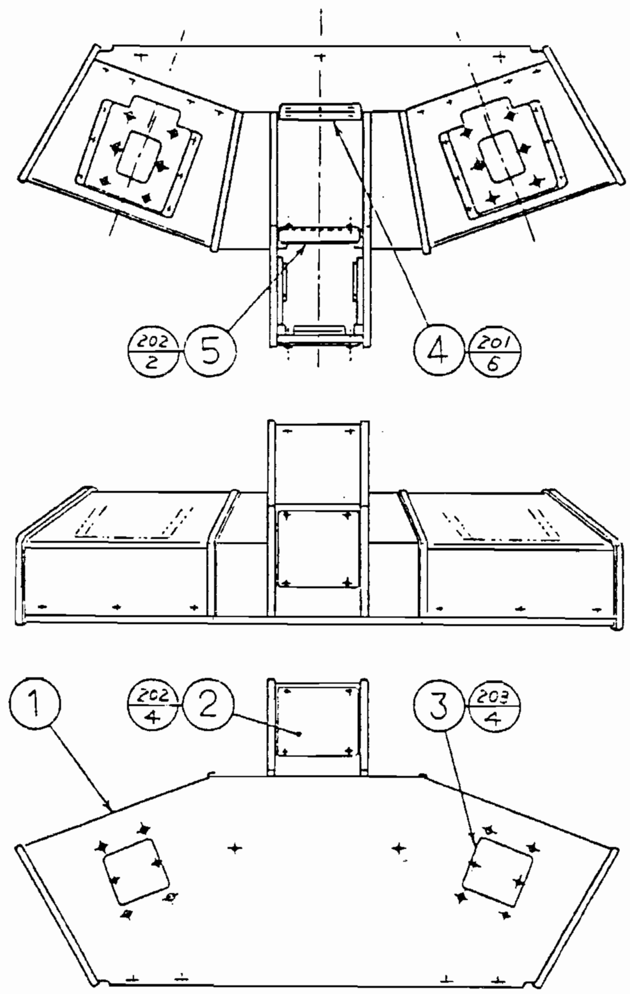
ASSY CONTROL PANEL (GTR-1200)

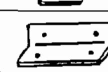
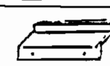
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-1201	ASSY SUBCABI CONTROL PANEL	
2	GTR-1205	MECHANISM HOLDER	
3	GTR-1208	ORNAMENT BRACKET B	
4	GTR-1209	HOLDER	
5	GTR-1211	DESIGN PANEL BLUE	
6	GTR-1212	DESIGN PLATE BLUE	
7	GTR-1213	DESIGN PANEL RED	
8	GTR-1214	DESIGN PLATE RED	
9	GTR-1215	DESIGN PANEL HOLDER	
10	GTR-1216	MECHANISM COVER A	
11	GTR-1217	MECHANISM COVER B	
12	GTR-1218	MECHANISM COVER C	
13	GTR-1219	MECHANISM COVER D	
14	GTR-1220	MECHANISM COVER E	
15	GTR-1250	ASSY MECHANISM SIDE	
16	GTR-1260	ASSY MECHANISM CENTER	
17	GTR-1253	HOLDER LEFT	
18	GTR-1254	HOLDER RIGHT	
19	GTR-1221	STICKER BILL	
20	GTR-1222	STICKER MAX	
21	GTR-1223	STICKER CAROL	
101	280-0419	HARNESS LUG	
201	001-0416	M SCR FH M4×16	
202	008-0406	TMP PRF SCR TH M4×6	

ASSY CONTROL PANEL (GTR-1200)

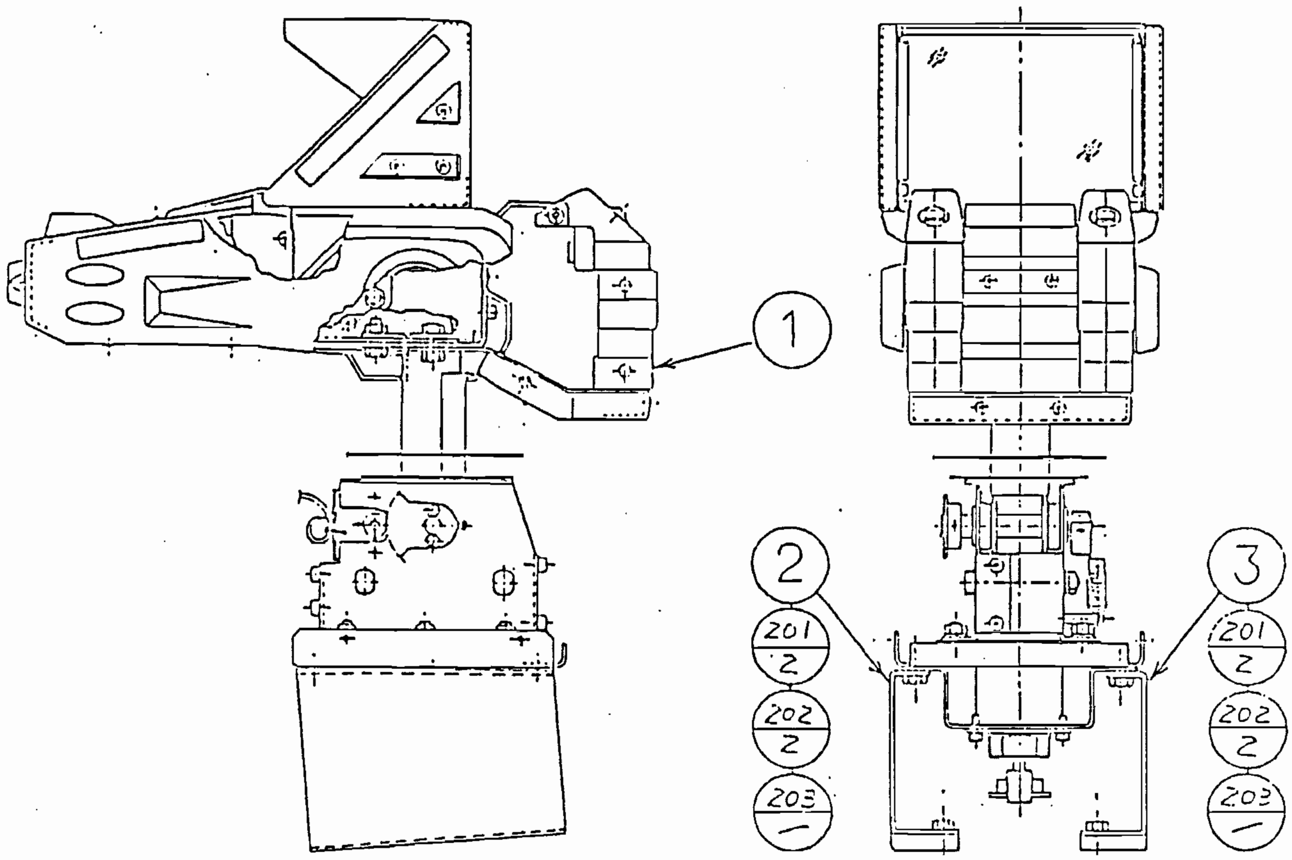
ITEM NO.	PART NO.	DESCRIPTION	NOTE
203	029-0169	TMP PRF SCR TH CHROME M4×16	
204	029-0250	TMP PRF SCR TH M8×35	
205	029-0021	M SCR TH BLK M4×18	
206	030-0835	HEX BLT M8×35	
207	069-0048	FLT WSHR BLK 8.5-22×1.6	
208	069-0026	SPR WSHR BLK M8	
209	029-0124	M SCR TH UCRM M4×6	
210	005-3110	W SCR RH 3.1×10	

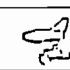
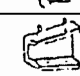
ASSY SUBCABI CONTROL PANEL (GTR−1201)



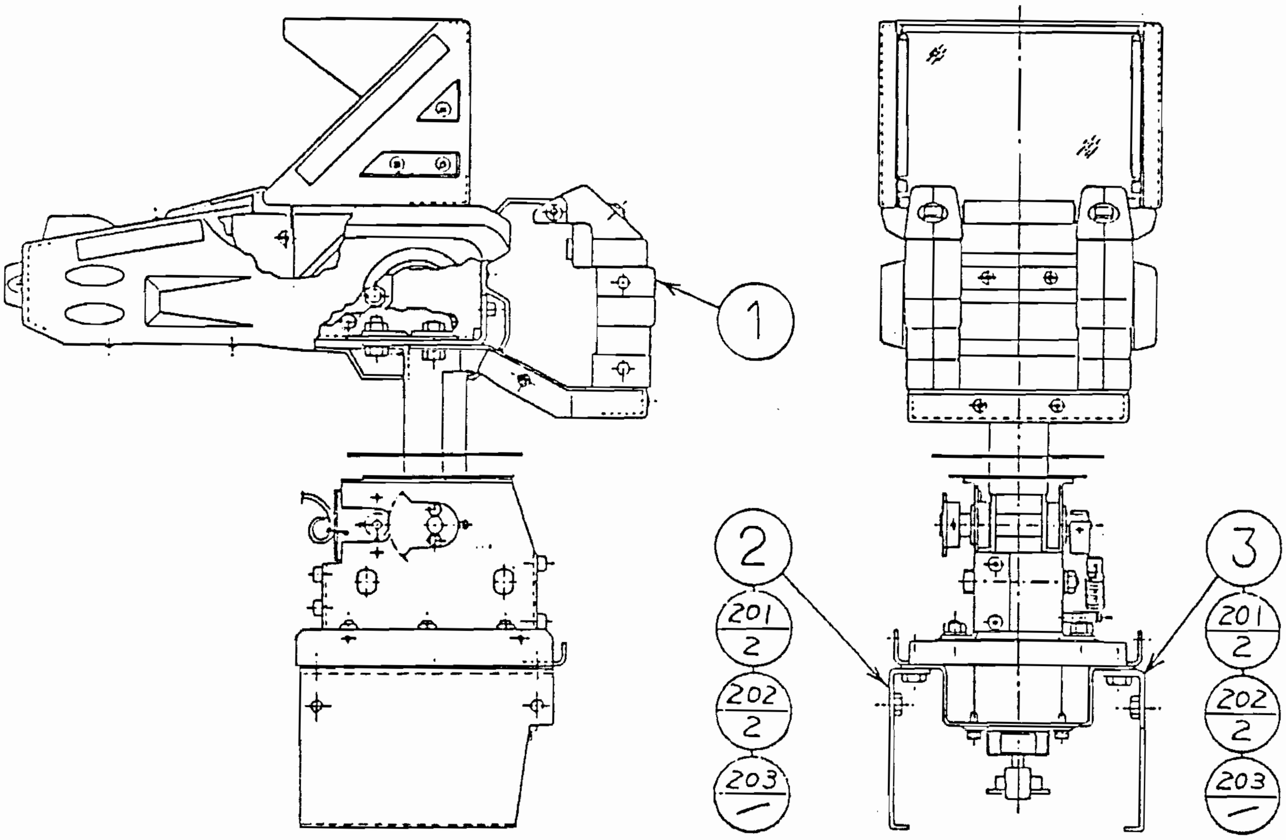
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR−1202	WOODEN CONTROL PANEL	
2	GTR−1203	VR ADJ PLATE A	
3	GTR−1204	VR ADJ PLATE B	
4	GTR−1210	HOLDER CENTER	
5	GTR−1207	ORNAMENT BRACKET A	
201	029−0059	W SCR PH BLK W/F 3.5×16	
202	008−0420	TMP PRF SCR TH M4×20	
203	008−0416	TMP PRF SCR TH M4×16	

ASSY MECHANISM SIDE (GTR-1250)



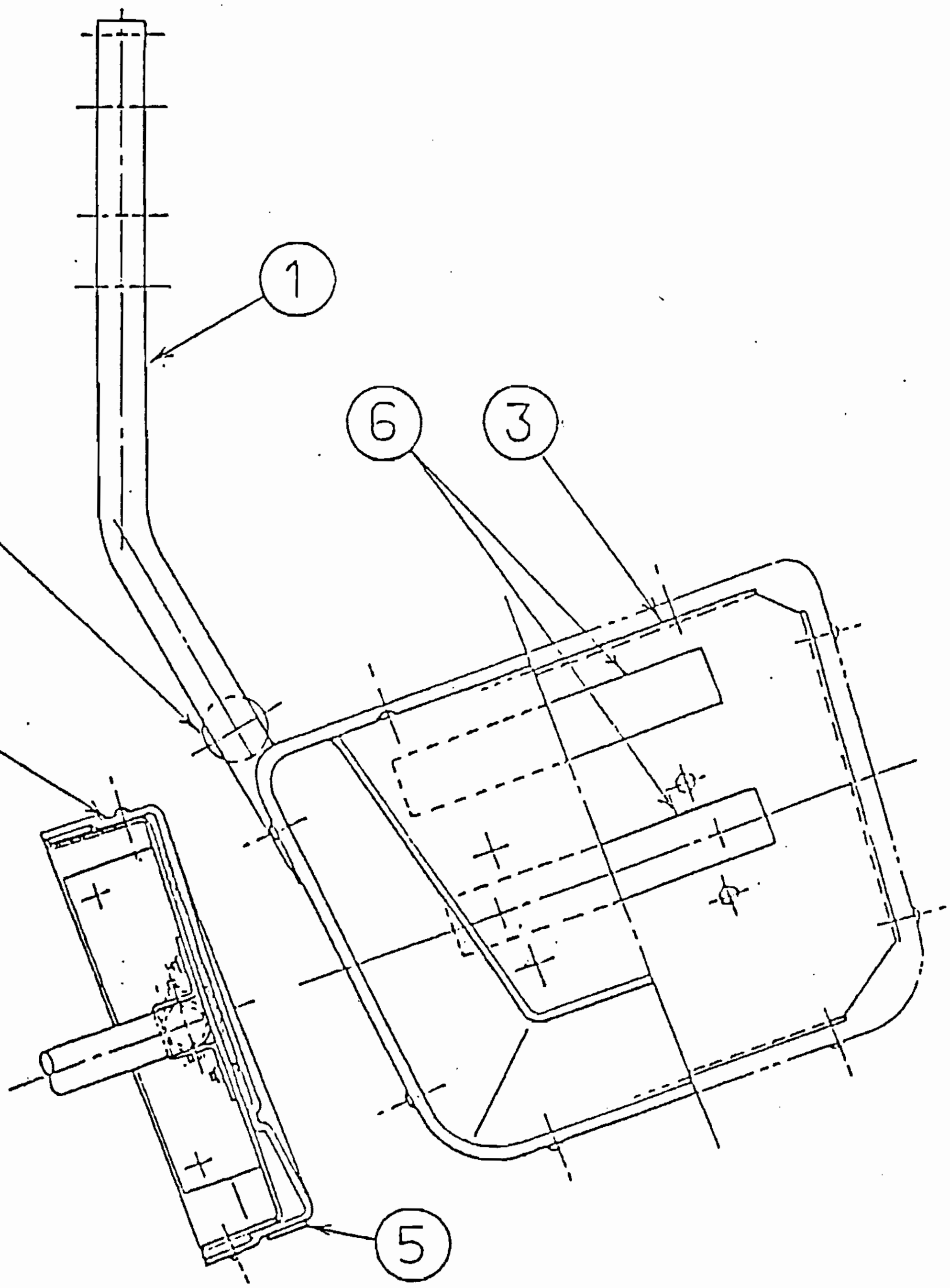
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-2000	ASSY LASER GUN	
2	GTR-1251	BASE LEFT	
3	GTR-1252	BASE RIGHT	
201	061-0008	SPR WSHR M8	
202	050-0008	HEX NUT M8	
203	090-0012	SCREW LOCK	

ASSY MECHANISM CENTER (GTR-1260)

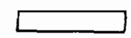
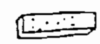


ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-2000	ASSY LASER GUN	
2	GTR-1261	BASE CENTER A	
3	GTR-1262	BASE CENTER B	
201	061-0008	SPR WSHR M8	
202	050-0008	HEX NUT M8	
203	090-0012	SCREW LOCK	

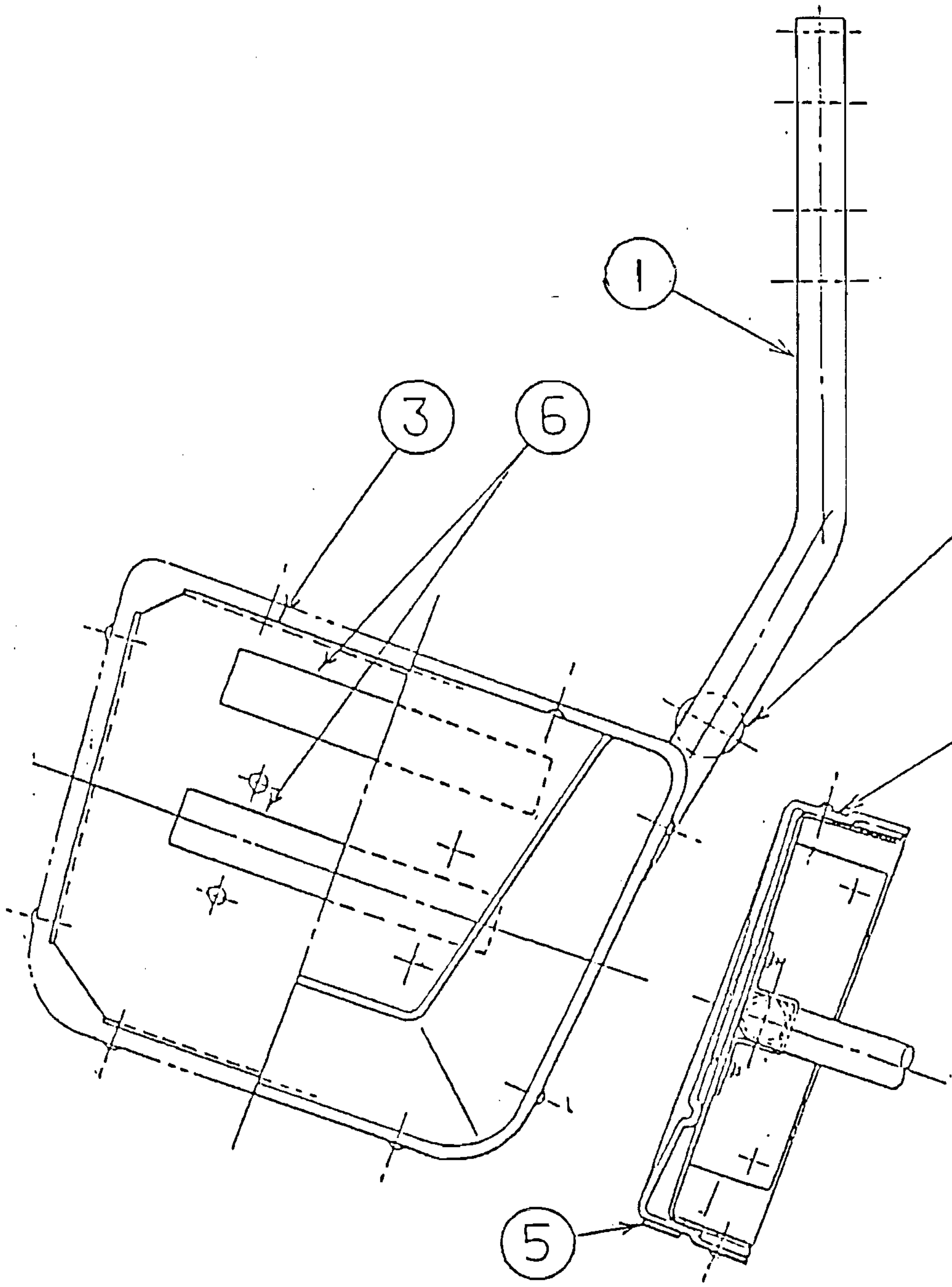
ASSY SEAT RIGHT (GTR-1300)



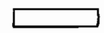
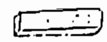
ASSY SEAT RIGHT (GTR-1300)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-1301	SADDLE BASE RIGHT	
2	GTR-1302	SEAT RIGHT	
3	GTR-1303	BASE	
4	601-0455	LEG ADJUSTER	
5	421-7726-01	STICKER CAUTION ENG	
6	GTR-1304	RUBBER PACKING	

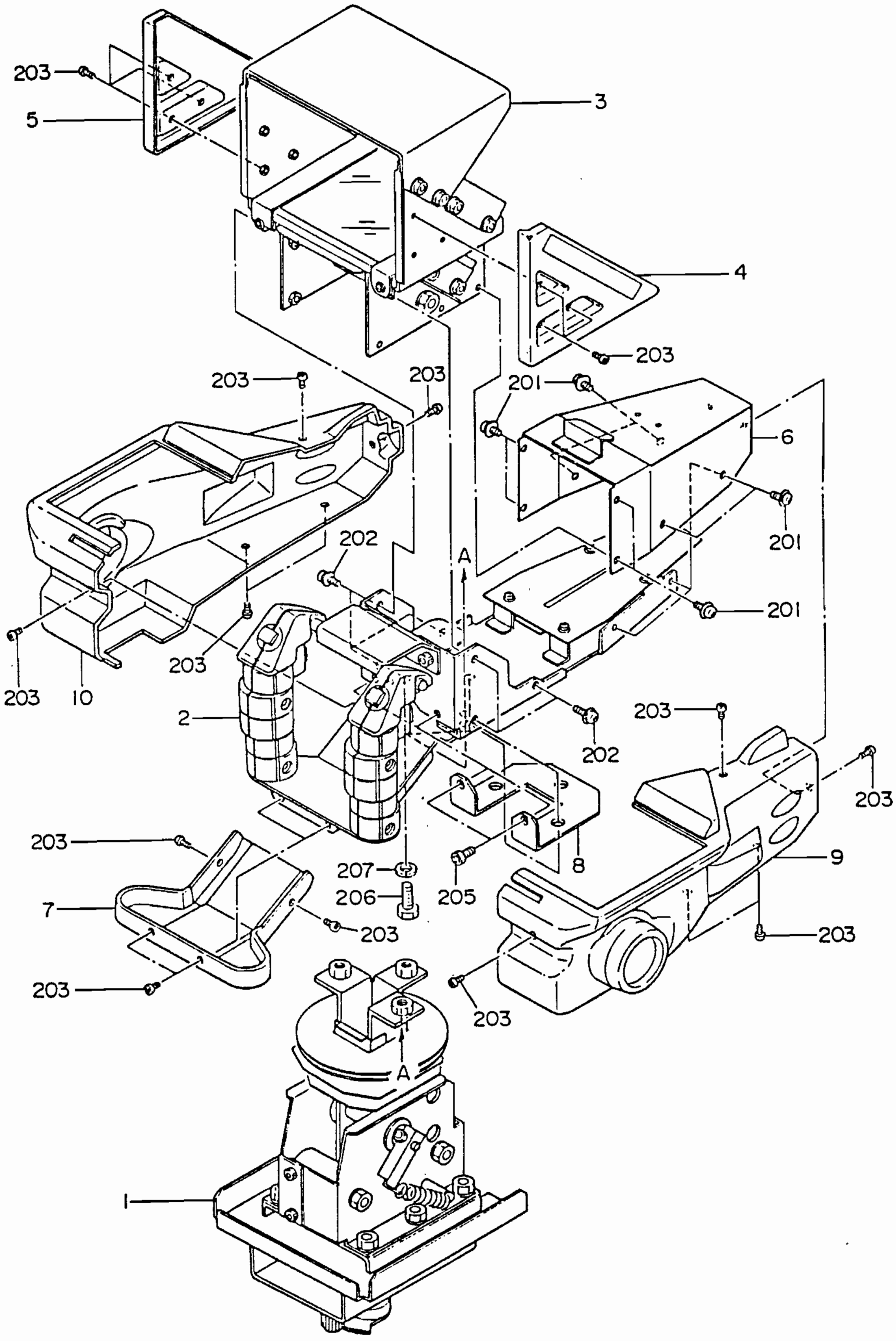
ASSY SEAT LEFT (GTR-1350)



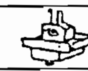
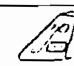
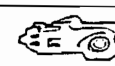
ASSY SEAT LEFT (GTR-1350)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-1351	SADDLE BASE LEFT	
2	GTR-1352	SEATE LEFT	
3	GTR-1303	BASE	
4	601-0455	LEG ADJUSTER	
5	421-7726 -01	STICKER CAUTION ENG	
6	GTR-1304	RUBBER PACKING	

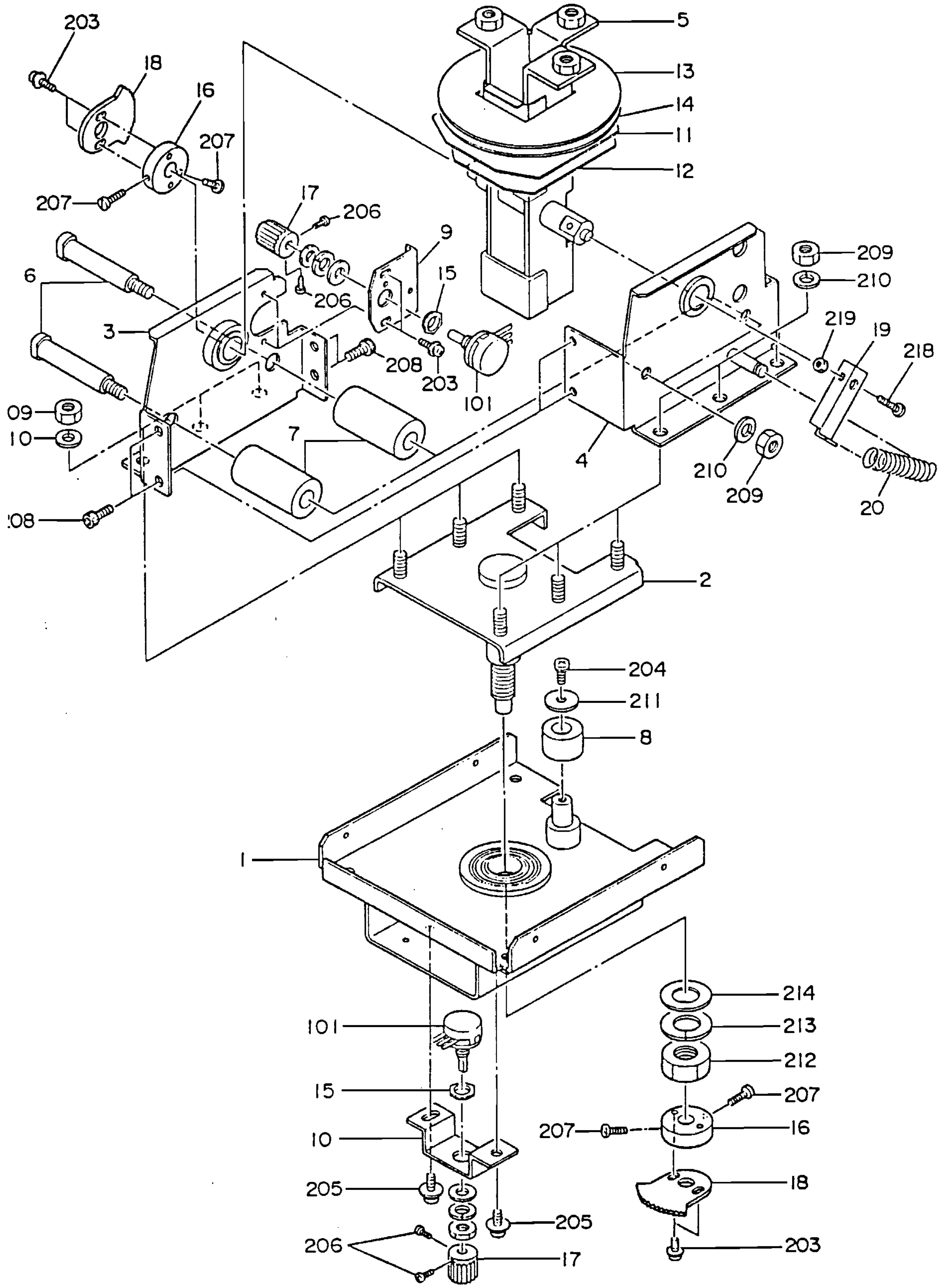
ASSY LASER GUN (GTR-2000)



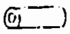
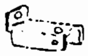
ASSY LASER GUN (GTR-2000)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-2001	MECHA UNIT	
2	GTR-2014	GUN UNIT	
3	GTR-2016	MIRROR BOX	
4	GTR-2036	ASSY COVER RIGHT	
5	GTR-2037	ASSY COVER LEFT	
6	GTR-2040	GUN COVER	
7	GTR-2043	GRIP BASE COVER	
8	GTR-2049	JOINT PLATE	
9	GTR-2050	ASSY BODY RIGHT	
10	GTR-2051	ASSY BODY LEFT	
201	000-0410-FS	M SCR PH W/FS M4×10	
202	000-0510-FS	M SCR PH W/FS M5×10	
203	008-0406	TMP PRF SCR TH M4×6	
204	010-0406-F	S-TITE SCR PH W/F M4×6	
205	029-0330	HEX SKT H CAP SCR BLK M6×10	
206	030-0825	HEX BOLT M8×25	
207	061-0008	SPR WSHR M8	
208	090-0012	SCREW LOCK	

MECHA UNIT (GTR-2001)



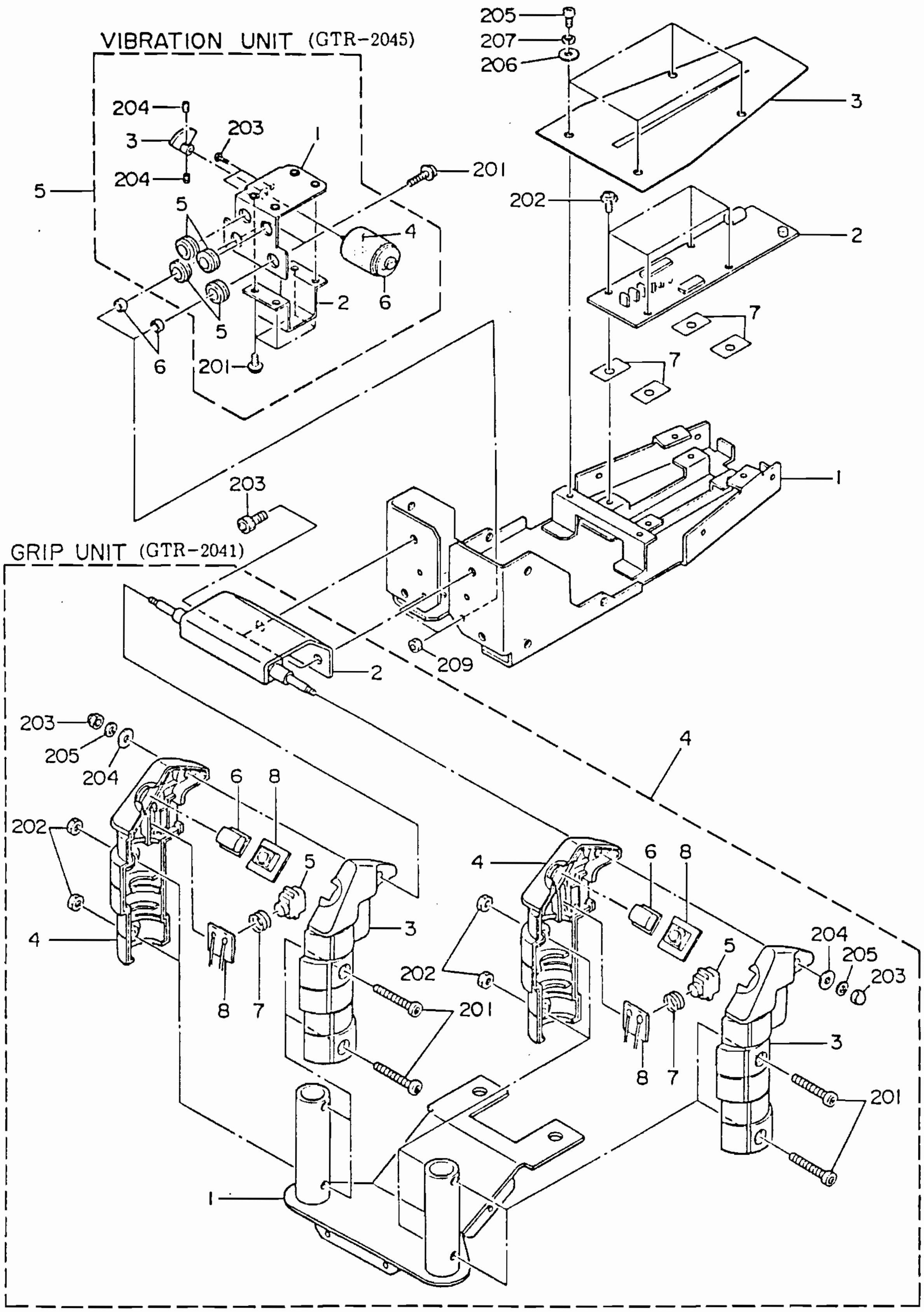
MECHA UNIT (GTR−2001)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR−2002	MAIN BASE	
2	GTR−2003	SWING BASE	
3	GTR−2004	RIGHT BRACKET	
4	GTR−2005	LEFT BRACKET	
5	GTR−2006	SWING ROD	
6	GTR−2007	STAY A	
7	GTR−2008	BUMPER L=52	
8	GTR−2009	BUMPER L=17	
9	GTR−2010	VOLUME PLATE	
10	GTR−2011	VOLUME BRACKET	
11	GTR−2012	SLIDE PLATE A	
12	GTR−2013	SLIDE PLATE B	
13	GTR−2052	HOLE COVER A	
14	GTR−2053	HOLE COVER B	
15	GUN−2623	VOLUME RING	
16	GUN−2629	GUIDE RING 140°	
17	601−5943	GEAR 20, ⌀15	
18	601−6005	ADJUST GEAR	
19	GTR−2054	SPRING ROD	
20	GTR−2055	SPRING	
101	220−5130	VOL CONT B−5K OHM	
102	601−6563−30	BUSH 2.4t ℓ=30	
103	601−6563−50	BUSH 2.4t ℓ=50	
104	601−6563−120	BUSH 2.4t ℓ=120	

MECHA UNIT (GTR–2001)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
201	001–0308	M SCR FH M3×8	
202	000–0408–FS	M SCR PH W/FS M4×8	
203	000–0412–FS	M SCR PH W/FS M4×12	
204	000–0510–S	M SCR PH W/S M5×10	
205	000–0510–FS	M SCR PH W/FS M5×10	
206	028–0003	SET SCR PH SPCL M3×8	
207	028–0021 028–0049	SET SCR PH SPCL M4×16 SET SCR HEX SKT CP M4×16	
208	029–0330	HEX SKT H CAP SCR M6×10	
209	050–0008	HEX NUT M8	
210	061–0008	SPR WSHR M8	
211	069–0001	FLT WSHR 5.5–20×1.6	
212	059–0016	HEX NUT M14	
213	069–0019	SPR WSHR M14	
214	069–0045	FLT WSHR M14	
215	090–0012	SCREW LOCK	
216	090–0013	GREASE	
217	090–0002	GLUE, CEMEDINE NO. 3000RS	
218	000–0420	M SCR PH M4×20	
219	054–0004	U NUT M4	

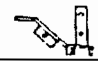
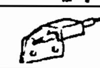
GUN UNIT (GTR-2014)



GUN UNIT (GTR-2014)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-2015	GUN BASE	
2	GTR-2038	LED BD W/HARNESS	
3	GTR-2039	SLIT	
4	GTR-2041	GRIP UNIT	
5	GTR-2045	VIBRATION UNIT	
6	GTR-2057	SPACER	
7	310-5044	PAPER INSULATOR	
201	000-0414-FS	M SCR PH W/FS M4×14	
202	010-0406-F	S-TITE SCR PH W/F M4×6	
203	029-0330	HEX SKT H CAP SCR BLK M6×10	
205	029-0047	M SCR PH BLK M4×10	
206	069-0024	FLT WSHR BLK M4	
207	069-0025	SPR WSHR BLK M4	
208	090-0012	SCREW LOCK	
209	050-0004	HEX NUT M4	
301	600-5931-08	WIRE HARN LED EXT	
302	280-0419	HARNESS LUG	

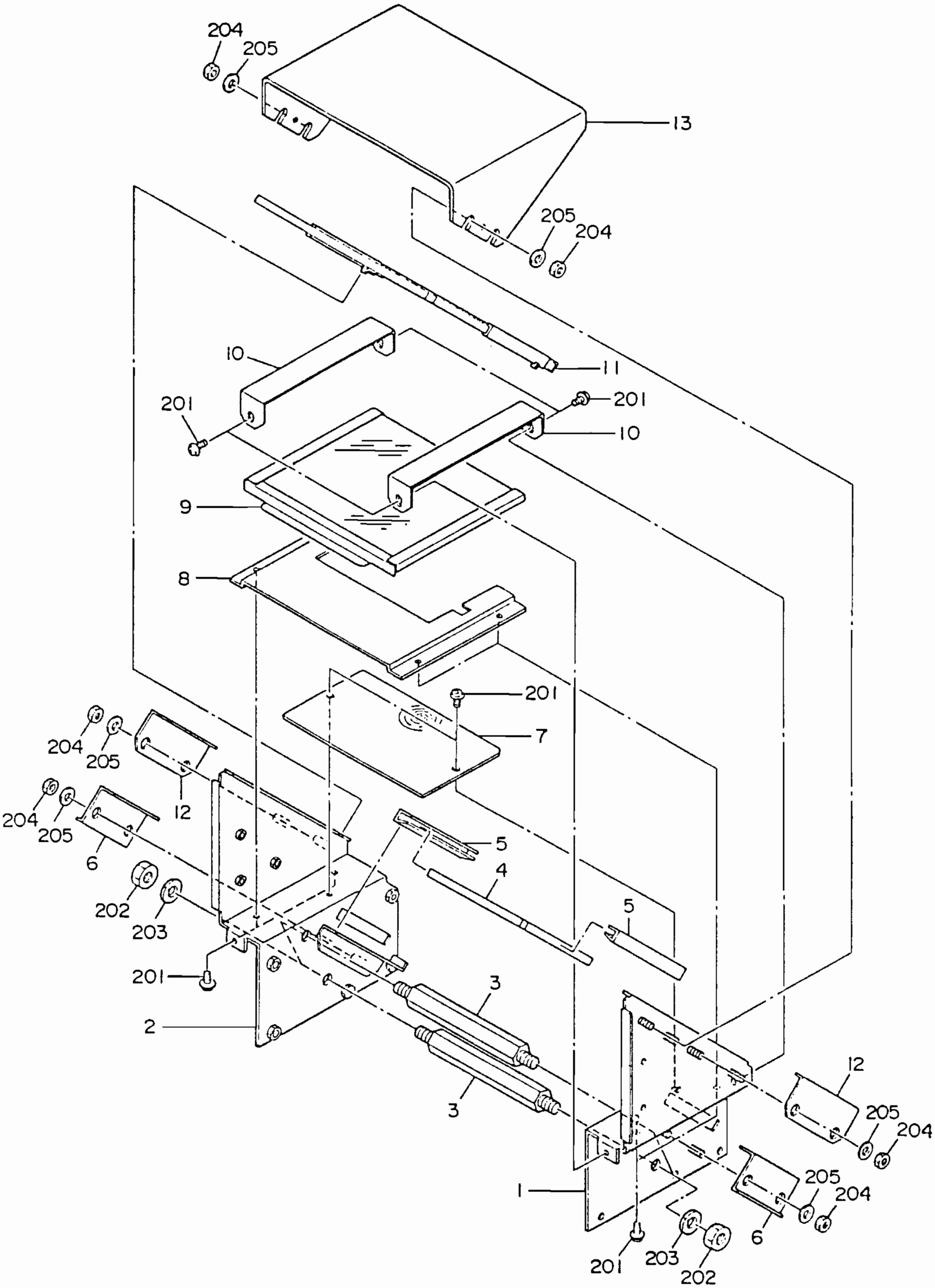
GRIP UNIT (GTR-2041)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-2042	GRIP BASE	
2	GTR-2044	GRIP HOLDER	
3	CY-2201	HANDLE GRIP RIGHT	
4	CY-2202X	HANDLE GRIP LEFT	
5	CY-2203	TRIGGER	
6	CY-2204X	TOP BUTTON	
7	CY-2207	COMPRESSION SPRING	
8	839-0016	ASSY SWITCH BOARD	
101	280-0425	CORD CLAMP ⌀10	
201	029-0073	TMP PRF SCR PH BLK M5×30	
202	059-0024	HEX NUT BLK M5	
203	059-0003	CAP NUT TYPE 3 CRM M4	
204	060-0004	FLT WSHR M4	
205	061-0004	SPR WSHR M4	
206	090-0012	SCREW LOCK	
301	600-5931-06	WIRE HARN GRIP SW	

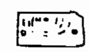
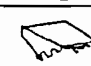
VIBRATION UNIT (GTR-2045)

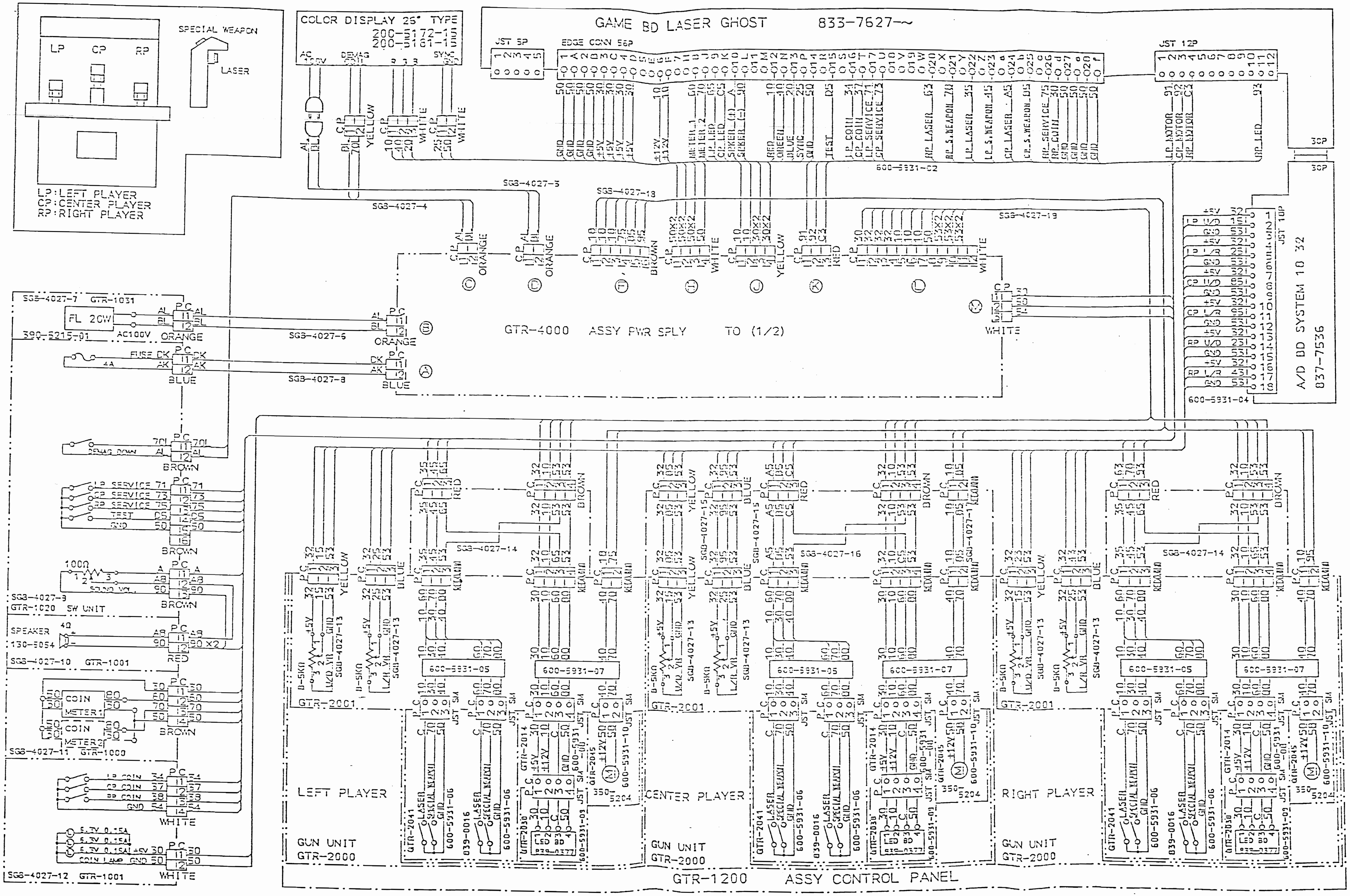
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-2046	MOTOR BRACKET	
2	GTR-2047	MOTOR COVER	
3	GTR-2048	MOTOR WEIGHT	
4	GTR-2056	CUSION	
5	601-6576	RUBBER GROMMET	
6	GTR-2058	MOTOR W/HARNESS	
201	000-0306-FS	M SCR PH W/FS M3×6	
203	029-0025	M SCR PH M2×5	
204	028-0046	SET SCR HEX SKT CONE POINT M3×4	
205	090-0012	SCREW LOCK	

MIRROR BOX (GTR-2016)

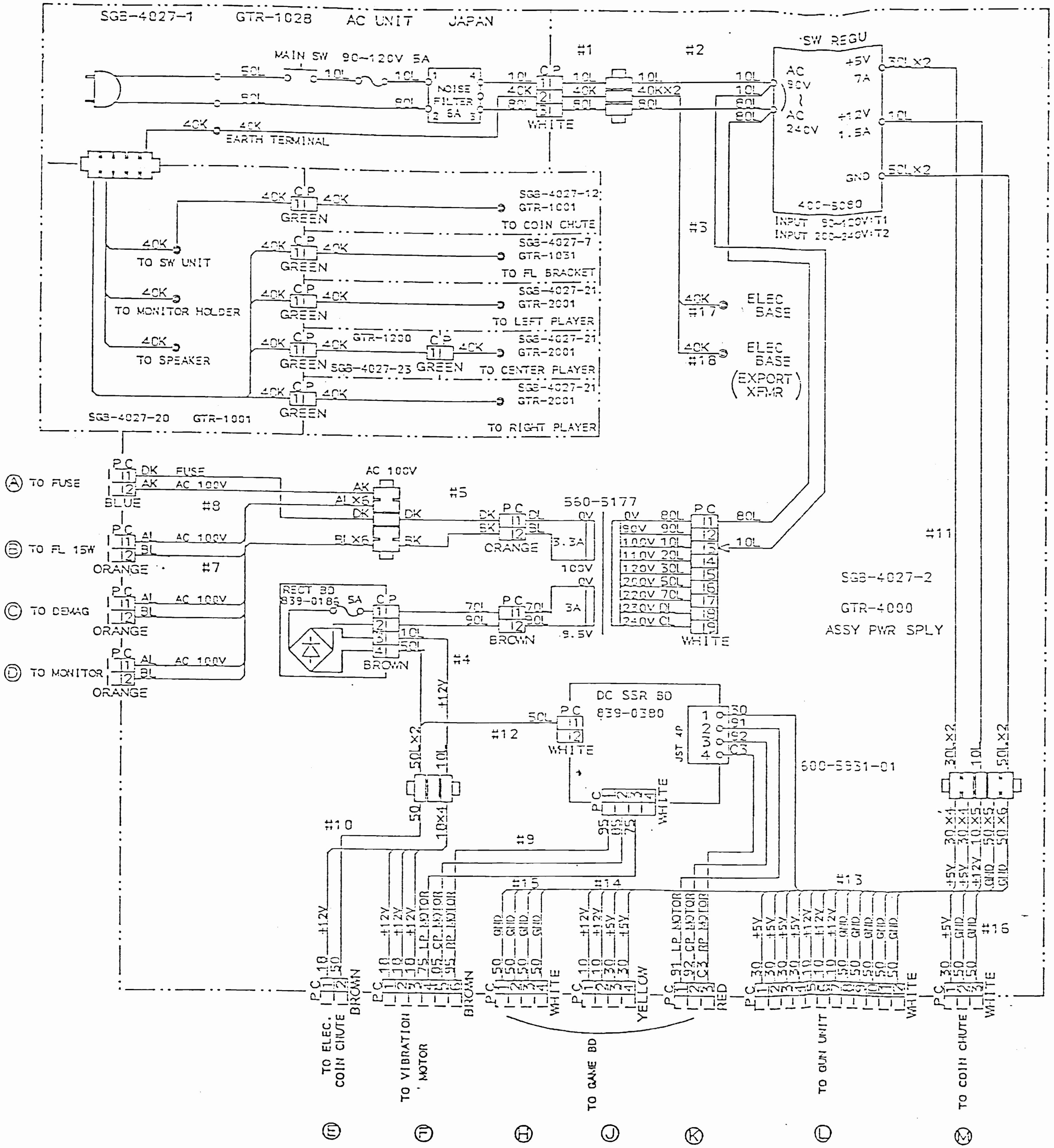


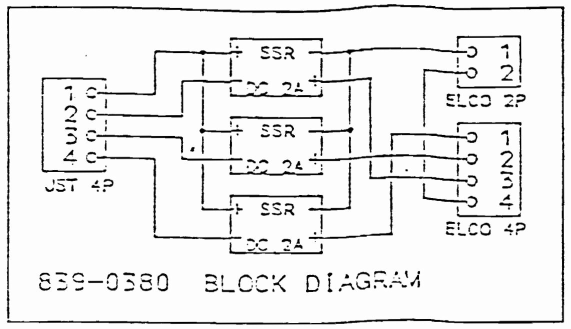
MIRROR BOX (GTR-2016)

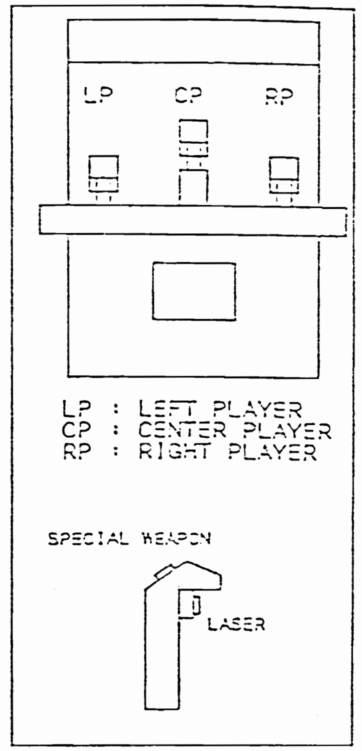
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	GTR-2017	MIRROR BRACKET R	
2	GTR-2018	MIRROR BRACKET L	
3	GTR-2019	STAY B	
4	GTR-2020	MIRROR	
5	GTR-2021	RUBBER A	
6	GTR-2022	MIRROR GUIDE	
7	GTR-2023	FLENEL LENS	
8	GTR-2024	GLASS STAY	
9	GTR-2025	COVER GLASS	
10	GTR-2029	GLASS HOLDER	
11	GTR-2030	WINDOW	
12	GTR-2034	WINDOW GUIDE	
13	GTR-2035	UPPER COVER	
201	029-0343	S-TITE SCR PH W/F BLK M3×6	
202	050-0008	HEX NUT M8	
203	060-0008	SPR WSHR M8	
204	054-0005	U NUT M5	
205	060-0005	FLT WSHR M5	

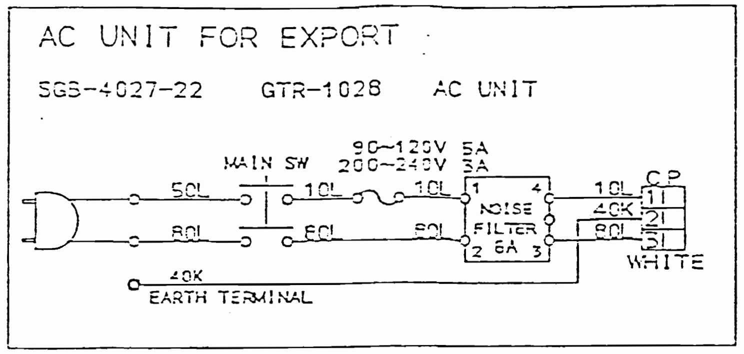


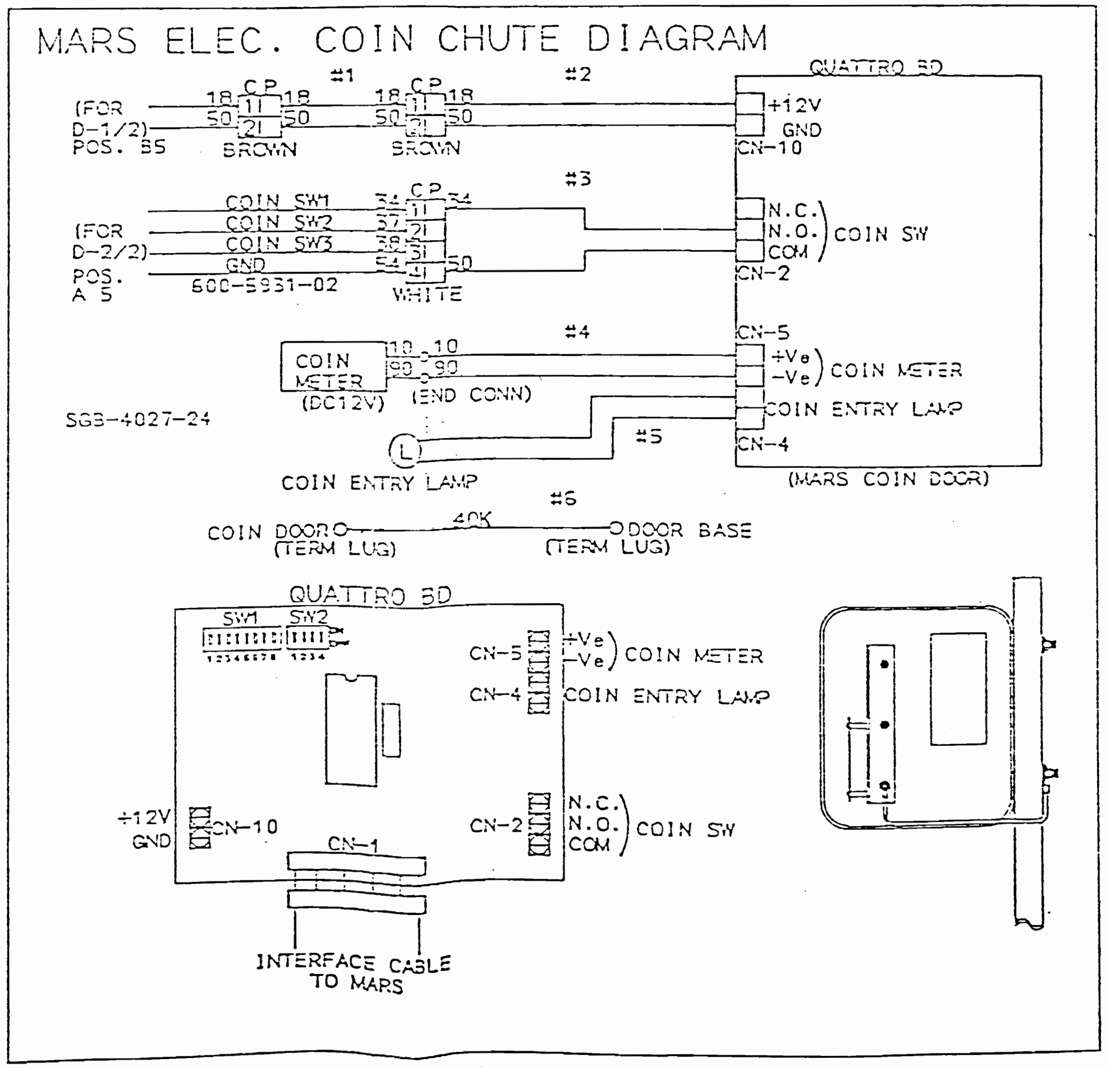
WIRING DIAGRAM











WIRING DIAGRAM